

KEH – 6000 RDS

PIONEER

SERVICE MANUAL

Service Manual

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• KEH-6000RDS



ORDER NO.
CRT1275

CASSETTE CAR STEREO WITH FM/MW/LW ELECTRONIC TUNER

KEH-4000RDS **EW, X1B**

Note

- See the separate manual CX-166 (CRT1094) for the cassette mechanism description.

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SAFETY INFORMATION

WARNING!

Lithium batteries. Danger of explosion. Replacement must be done by qualified personnel and only by following the instructions given in the service manual.

This warning is stated on the product or in the operating instructions. When replacing the lithium batteries, follow the note below.

Dispose of the used battery promptly. Keep away from children. Do not disassemble and do not dispose of in fire.

The battery used in this device may present a fire or chemical hazard if mistreated. Do not recharge, disassemble, heat above 100°C or incinerate. Replace only with the same Part Number. Use of another battery may present a risk of fire or explosion.

Note: The lithium battery installation position is shown in the exploded view and the P.C. board pattern.

ADVARSEL!

Lithiumbatteri — Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

Denne advarsel er angivet på produktet eller i brugsvejledningen. Ved udskiftning af lithium batterierne følges nedenstående anvisning.

Batterierne må kun udskiftes med batterier af samme type og mærke.

VARNING

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

Denna varning finns på apparaten eller i bruksanvisningen. Följ nedanstående anvisningar vid byte av litiumbatterier.

Batterierna får endast bytas ut mot litiumbatterier av samma typ och fabrikat.

1. SPECIFICATIONS

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General

Power source	14.4 V DC (10.8 – 15.6 V allowable)
Grounding system	Negative type
Max. current consumption	7.0 A
Dimensions (chassis)	180(W) × 50(H) × 150(D) mm
(front face)	188(W) × 58(H) × 13(D) mm
Weight	1.4 kg
Amplifier	
Maximum power output	25 W × 2/15 W × 4 (EIAJ)
Continuous power output	11 W × 2 (1% dist. at 1 kHz)
Load impedance	4Ω (4 – 8 Ω allowable)
Max. output level/output impedance (pre out)	
(KEH-600RDS)	250 mV/1 kΩ
Tone controls (bass)	±10 dB (100 Hz)
(treble)	±10 dB (10 kHz)
Loudness contour	+12 dB (100 Hz), +7 dB (10 kHz)
	(volume: -30 dB)

Tape player

Tape	Compact cassette tape (C-30 – C-90)
Tape speed	4.76 cm/sec. (+0.14 cm/sec., -0.05 cm/sec.)
Fast forward/rewind time	Approx. 100 sec. for C-60
Wow & flutter	0.13% (WRMS)
Frequency response	Metal: 40 – 17,000 Hz (±3 dB)
Stereo separation	45 dB
Signal-to-noise ratio	Metal: Dolby B NR IN: 66 dB (IEC-A network)
	Dolby NR OUT: 60 dB (IEC-A network)

FM tuner

Frequency range	87.5 – 108 MHz
Usable sensitivity	11 dBf (1.0 μV/75 Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity	16 dBf (1.7 μV/75 Ω, mono)
Signal-to-noise ratio	70 dB (IEC-A network)
Distortion	0.3% (at 65 dBf, 1 kHz, stereo)
Frequency response	30 – 15,000 Hz (±3 dB)
Stereo separation	40 dB (at 65 dBf, 1 kHz)

MW tuner

Frequency range	531 – 1,602 kHz
Usable sensitivity	18 μV (25 dB) (S/N: 20 dB)
Selectivity	50 dB (±9 kHz)

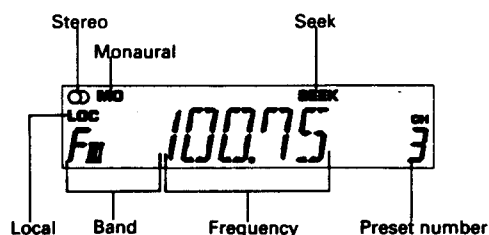
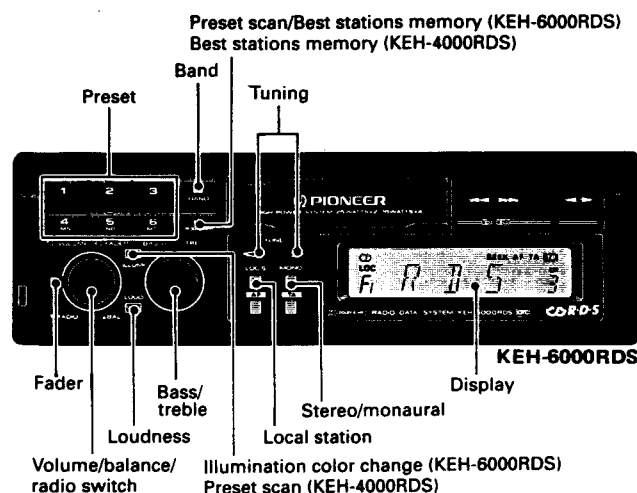
LW tuner

Frequency range	153 – 281 kHz
Usable sensitivity	30 μV (30 dB) (S/N: 20 dB)
Selectivity	50 dB (±9 kHz)

Note:

Specifications and the design are subject to possible modification without notice due to improvements.

2. USING THE RADIO



• Before attempting operation...

- Reduce the volume by turning the volume control knob to the left.
- Set the fader control to the left horizontal.
- 1. Press the radio switch to turn on power and display the frequency.
- 2. Press the band switch to select the band.
- Switching between FM and MW/LW is controlled by the band switch. Switching between LW and MW is accomplished using the tuning button. The MW band is from 531 kHz to 1,602 kHz, and the LW band is from 153 kHz to 281 kHz.
- 3. Press both ends of tuning button and the seek tuning indicator will appear on the display.
- 4. Press either the left or right side of the tuning button to tune in the desired frequency. (Pressing the right side will increase the frequency.)
- 5. Adjust the volume and balance. To adjust the balance, first pull the knob until a click is heard. After setting to the desired level, push the knob in again to its original position.
- 6. Adjust the tone to an appropriate level. To adjust the treble, pull the knob toward you and set it to the desired level.

• To enter a frequency into the preset memory...

- 7. Hold down one of the preset buttons (1-6) for approximately two seconds. The frequency is stored in memory (assigned to the preset button pressed) once the preset number stops flashing on the display.
- Six FM1 frequencies, six FM2 frequencies, six FM3 frequencies and six MW and LW frequencies can be entered.

• Best Stations Memory Button

Automatically tunes strong frequencies and assigns them to preset buttons 1 through 6 for one-touch automatic tuning. The best stations memory function is activated by pressing this button for approximately 2 seconds. The best stations memory function is indicated by ----- flashing on the display, and this function can be canceled by pressing the band switch. The frequency display returns once the best stations memory function is complete. The frequency displayed at this time is of the strongest station assigned to preset button 1 by the best stations memory function.

- 6 best (strongest) frequencies are memorized in the 6 preset buttons in the order of their strength, the strongest one being assigned to preset button 1.
- The frequencies previously assigned to the preset buttons are retained when 6 frequencies cannot be located.
- The best stations memory is in operation while ----- is flashing on the display.

• Stereo/Monaural Switch

This switch is used to change from stereo to monaural for FM broadcasts, and is usually left in the stereo position. When a stereo broadcast is received, the stereo indicator will illuminate. With the "Automatic Reception Control" (ARC) function, stereo broadcasts can always be enjoyed in their optimal reception mode. If excessive noise is present, pressing this switch allows monaural reception of the broadcast.

• Local Station Switch

Pressing this switch increases the seek threshold level so that only relatively strong stations can be tuned in (local indicator will illuminate on the display). Local seek threshold level can be selected among four levels for FM and two levels for MW and LW. Holding this switch down for approximately 2 seconds, and the display will show you the current local seek threshold level for about 5 seconds. While the local seek threshold level remains on the display, pressing the right side of the tuning button changes the display from L-1, L-2, L-3 to L-4. Pressing the left side of the tuning button changes the display from L-4, L-3, L-2 to L-1 (L-1 and L-2 for MW/LW). The bigger the number, the higher the seek threshold becomes and only relatively strong stations can be tuned in.

• Fader Control

This control is used to adjust the balance between the front and rear speakers when using a 4-speaker system. Turning the control upwards decreases the volume of the rear speakers, while turning it downwards decreases the volume of the front speakers. With 2-speaker systems, set this control to a horizontal position.

• Loudness Switch

When playing back a tape or listening to the radio at low volume, the low and high tones are emphasized and more clearly heard by pressing this switch.

Seek Tuning

Press both ends of tuning button and tuning to the next higher or lower broadcast on the band can be accomplished automatically by simply pressing either the right or left side of the tuning button. FM frequencies change in 50 kHz steps while those in the MW and LW bands change in 9 kHz steps.

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Preset Scan Tuning

Pressing the preset scan button (the preset number flashes) causes previously stored frequencies to be tuned in sequentially for eight seconds each. Press again when the desired frequency is tuned in to cancel preset scan tuning.

Preset Tuning

Pressing the preset button instantly tunes in the frequency programmed in the memory for that button.

Manual Tuning

When manual tuning is employed, FM frequencies change in 50 kHz steps, LW frequencies change in 1 kHz steps, and MW frequencies change in 9 kHz steps.

1. Press both ends of tuning button and the seek tuning indicator will disappear from the display.
2. Change the frequency by pressing either the left or right side of the tuning button. Pressing the button once will change the frequency one step (see above). Continuously depressing either side of the button will successively change the frequency at the prescribed step.

Changing Illumination Color (KEH-6000RDS)

To change illumination color, press the button Illumination Color Change. Pressing allows change from green to red and vice versa.

Using Input Terminal (KEH-6000RDS)

To operate a CD player (sold separately) using this unit, connect the player to Input terminal. Before playing a CD, however, be sure that the cassette tape is ejected and the radio is turned off. "CD" appears on the display when the player is operating.



3. USING THE RDS FUNCTION

What is RDS?

The RDS (Radio Data system) is a digital information system developed by the EBU (European Broadcasting Union). Piggy-backed on normal FM broadcasts, RDS offers a variety of information services and automatic retuning functions for RDS-compatible car stereos.

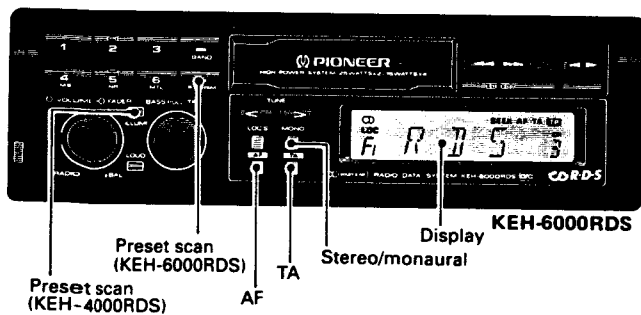
RDS digital data includes various data, such as PI, PS, AF, TP, and TA.

- PI Program Identification
- PS Program Service Name
- AF List of Alternative Frequencies
- TP Traffic Programme
- TA Traffic Announcement

RDS function of this unit

This unit has the following functions for making use of RDS data.

- Station name display using PS.
- AF (Alternative Frequency) reception, which automatically tunes into the stronger station in the network being listened to using PI and AF.
- Automatic reception of traffic information broadcasts using TP/TA.



Network/station name display

Switch the radio on and choose one of the three FM bands.

When you tune into an RDS station with manual or seek tuning, the frequency display changes to the network/station name display after a few seconds by means of the PS code.

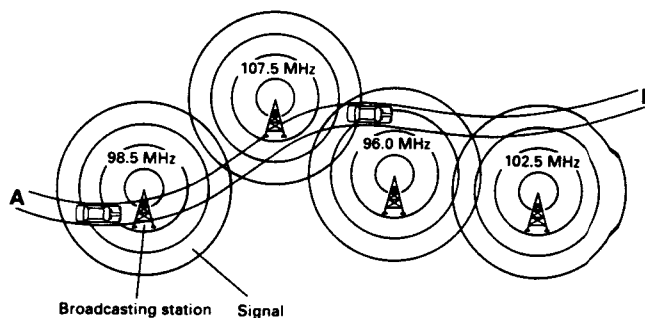
- The RDS functions of this unit use RDS codes transmitted along with FM broadcasts. RDS doesn't work on the MW or LW bands.
- The RDS functions may not work properly in areas where the RDS transmissions are at an experimental stage or where there are flaws in the broadcasting system.
- To see the frequency when the network/station name is being displayed, hold the stereo/monaural button down for at least two seconds. The frequency will then appear and will stay on for as long as the button is held down.

AF (Alternative Frequency) Reception

This unit retunes to the stronger alternative transmitter in the list of alternative frequencies (AF). Thus a motorist can keep listening to the programs in the same network.

Example:

If there are the following network broadcasting stations, the reception frequency automatically changes from 98.5 MHz to 107.5 MHz to 96.0 MHz to 102.5 MHz, but a motorist can keep listening to the programs in the same network while driving from point A to point B.



Alternative Frequency reception

To select Alternative Frequency reception, press the AF button. Once tuned to an RDS network station, as long as you drive within the area or nation served by the network, the unit will automatically retune to the strongest transmitter serving the network, using the PI and AF codes, when the tuned station gets weaker.

- When the AF button is on, only RDS stations can be tuned in with seek or preset scan tuning.
- If BSM is activated while the AF button is on, only RDS stations will be preset.
- Non-RDS stations such as those using the Swedish MBS system may be tuned in as RDS stations, but this is due to both systems sharing the same 57-kHz subcarrier frequency and is not a malfunction of the unit.
- If the tuned RDS station doesn't have AF (List of Alternative Frequencies) data or the unit cannot receive the AF data for some reason, the AF function will not work when the tuned RDS station's signal falls below a certain level. When this happens, AF flashes on the display, indicating that it isn't working.
- If the signal from the tuned RDS station falls below a certain level and AF works, it may be that the other transmitters on the same network are found to be even weaker. If this is the case, AF flashes on the display, indicating that it isn't working.
- If a station frequency is held in a preset memory for FM band, the AF function will also be available to the preset station (Network memory).
- If the AF button is pressed before selecting a preset station, the alternative frequency reception functions when the preset station is being recalled. Because of this, there may be a pause before the station comes on, but this is not a malfunction.
- At times, some stations in a network broadcast regional programs that are different from those of the other stations in the network. If the radio has picked up a regional program and you want to continue listening to it, hold the AF button down for more than two seconds to switch the regional function on. (REG ON will appear on the display while the button is held down.) Using the AF function, the radio tunes into those stations that are broadcasting the regional program. Hold down the AF button again for more than two seconds to cancel the regional function. (REG OFF will appear on the display while the button is held down.)

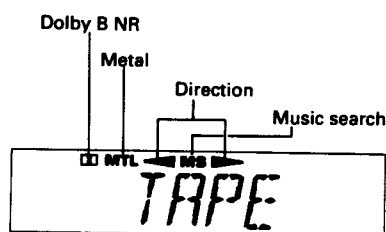
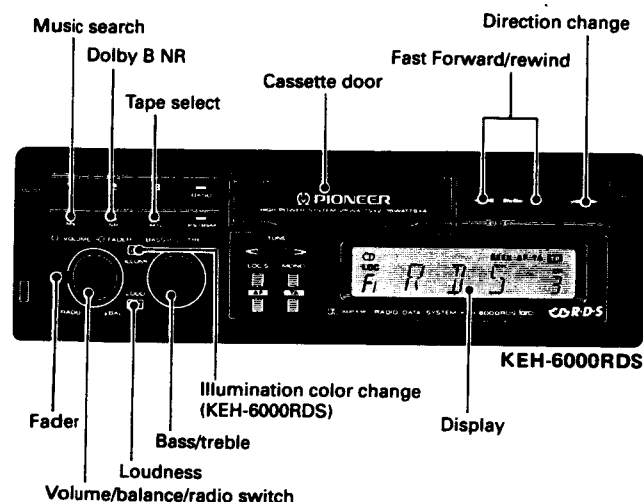
Traffic information reception

Tune to a station (TP appears on the display) to receive traffic bulletins. If you'd like to stand by for the bulletins while listening to a cassette or CD (KEH-6000RDS), tune to a TP or SK station and then press the TA button. When a traffic bulletin is broadcast, the set automatically switches from a cassette or CD to the bulletin. The volume automatically increases for the bulletin and cannot be turned down.

- Even when the radio is off, pressing the TA button while listening to a cassette or CD switches the radio on and readies it to pick up traffic bulletins, unless the radio is set to MW or LW, in which case, the radio does not go on and an alarm beeps.
- While TA is on and you are listening to a cassette or CD (TA is shown on the display), the radio starts BSA (Best TP or SK Station Auto search) 10 to 18 seconds after TP disappears from the display, tunes in the strongest TP or SK station, and stands by for a traffic bulletin. BSA doesn't work when AF is on, so turn the AF button off when you want to use BSA.
- While TA is on and you are listening to a cassette or CD, pressing the preset scan button causes the radio to start TIPS (Automatic monitoring of the several TP or SK stations) and stand by for a traffic bulletin from any one of these preset TP or SK stations in the same band as that currently being used.
- When the AF button is off, three minutes or more after TP has disappeared from the display during TIPS, the radio starts BSA.
- Don't press the TA button in an area or a country where the traffic information service is not available, as seek tuning and preset scan will not pick up any stations. An alarm sounds 30 seconds after the TA button has been pressed, warning the driver to switch it off.
- Thirty to 38 seconds after TP disappears from the display, which occurs if the signal from the TP or SK station becomes weak, an alarm sounds for ten seconds to tell you to tune to another TP or SK station.

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4. USING THE TAPE DECK



• Before attempting operation...

- Reduce the volume by turning the volume control knob to the left.
- Set the fader control to the left horizontal.
- 1. Insert a tape into the deck to turn the power on and automatically begin playback. Even if the radio is on, the unit will automatically switch to and begin tape playback.
- 2. Adjust the volume and balance. To adjust the balance, first pull the knob until a click is heard. After setting to the desired level, push the knob in again to its original position.
- 3. Adjust the tone to an appropriate level. To adjust the treble, pull the knob toward you and set it to the desired level.
- 4. When tape playback reaches the end of the tape, playback will automatically switch from the side being played to the opposite side (ie. Side A to Side B or vice versa) (Auto-reverse). To eject the tape during playback, simultaneously press the fast forward and rewind buttons.
- A loose or warped label on a cassette tape may interfere with the eject mechanism of the unit or cause the cassette to become jammed in the unit. Avoid using such tapes or remove such labels from the cassette before attempting use.
- Do not try to eject the cassette immediately after insertion, as it will cause malfunction. Wait a few seconds.

• Fast Forward/Rewind

Since the transport can be in either direction, both the left and right high-speed tape transport buttons can be regarded as fast forward/rewind buttons.

For fast forward, press the high-speed tape transport button that corresponds to the direction that is shown by the direction indicator. When the end of the tape is reached, playback will automatically begin from the opposite side of the tape (Auto-reverse).

For rewind, press the button that is opposite that of the direction shown by the direction indicator. When the end of the tape is reached, playback will automatically begin from the beginning of the same side of the tape (Auto-replay).

Fast forward and rewind can be terminated by pressing the respective opposite high-speed tape transport button.

• Direction Change Button

This button is used to switch from one side of the tape to the other (from Side A to Side B or vice versa).

• Dolby B NR Switch

Press when playing a tape recorded with Dolby NR.

• Tape Select Switch

This switch is used to switch to the proper mode for the tape being used and should be depressed when using chrome or metal tapes.

Music Search

• Returning to the beginning of selection A

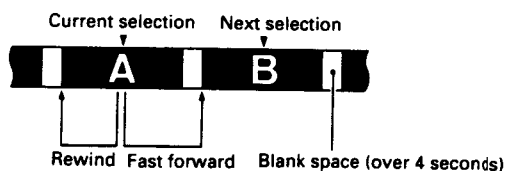
Press the music search button and then the high-speed tape transport button for the direction opposite that is shown by the direction indicator. Playback will automatically start from the beginning of selection A.

• Moving from selection A to selection B

Press the music search button and then the high-speed tape transport button that corresponds to the direction shown by the direction indicator. Playback will automatically start from the beginning of selection B.

To enable regular fast forward/rewind operations, press the music search button again to turn the function OFF. The following errors will cause the music search function to operate improperly, even though the unit is not malfunctioning.

- Unrecorded "blank" portions between selections less than 4 seconds → the blank portion cannot be detected by the unit.
- Pauses in recorded conversations longer than 4 seconds → the unit reads these as blanks between selections.
- Portions recorded at very low volume for more than 4 seconds → the unit reads these as blanks between selections.

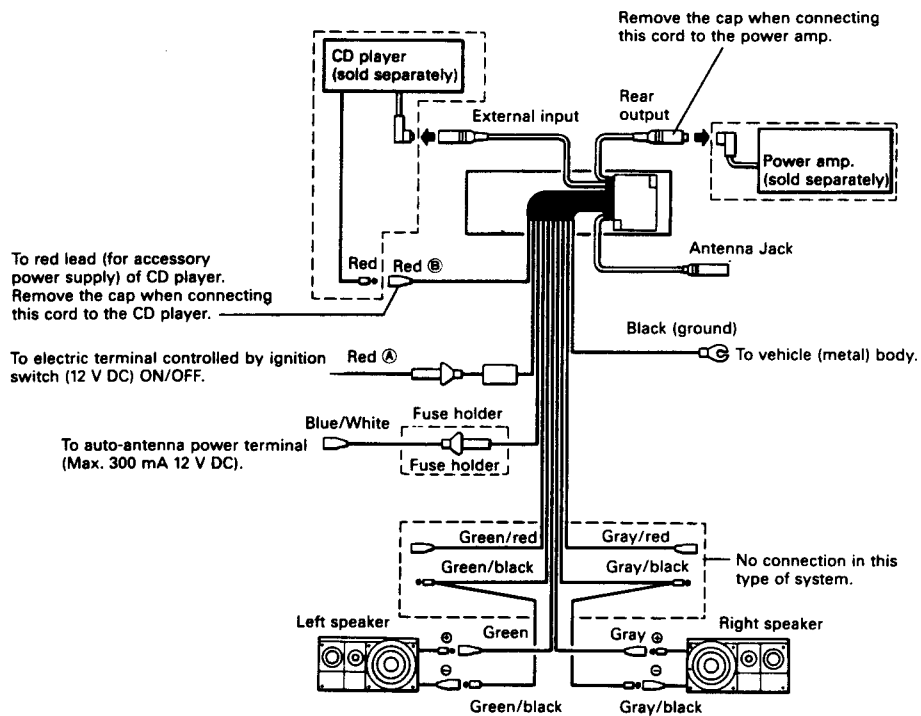


5. CONNECTIONS

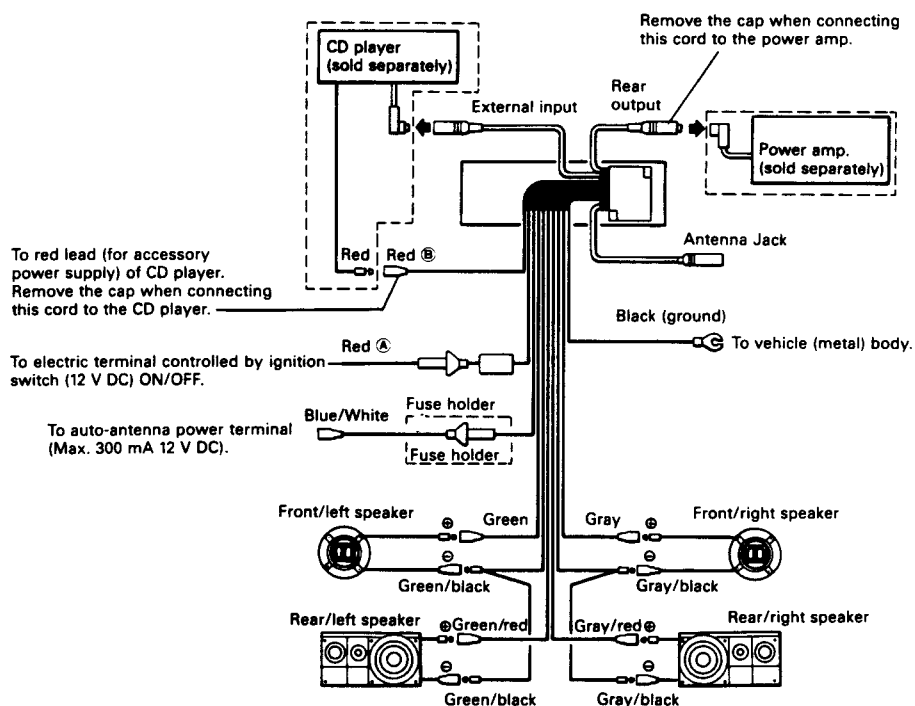
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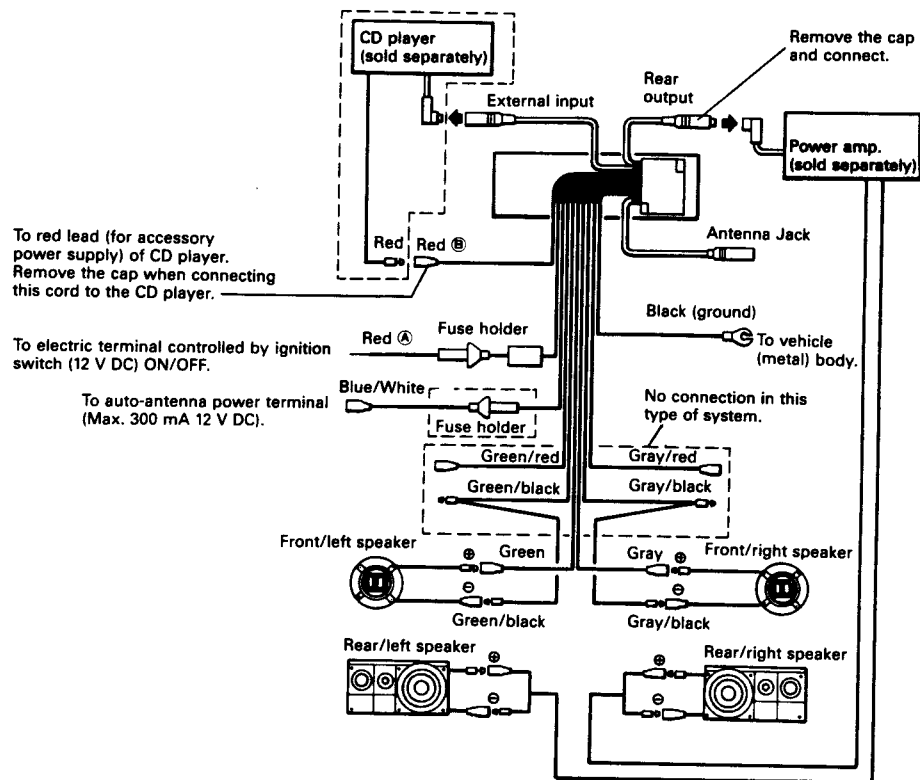
2-speaker system



4-speaker system 1

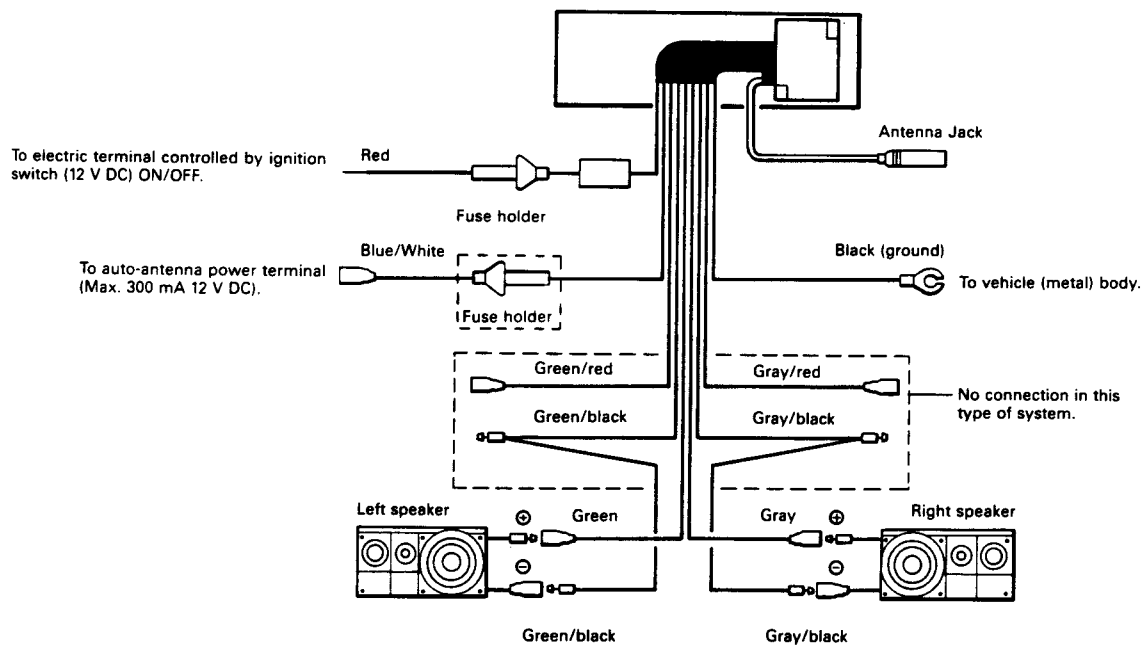


4-speaker system 2

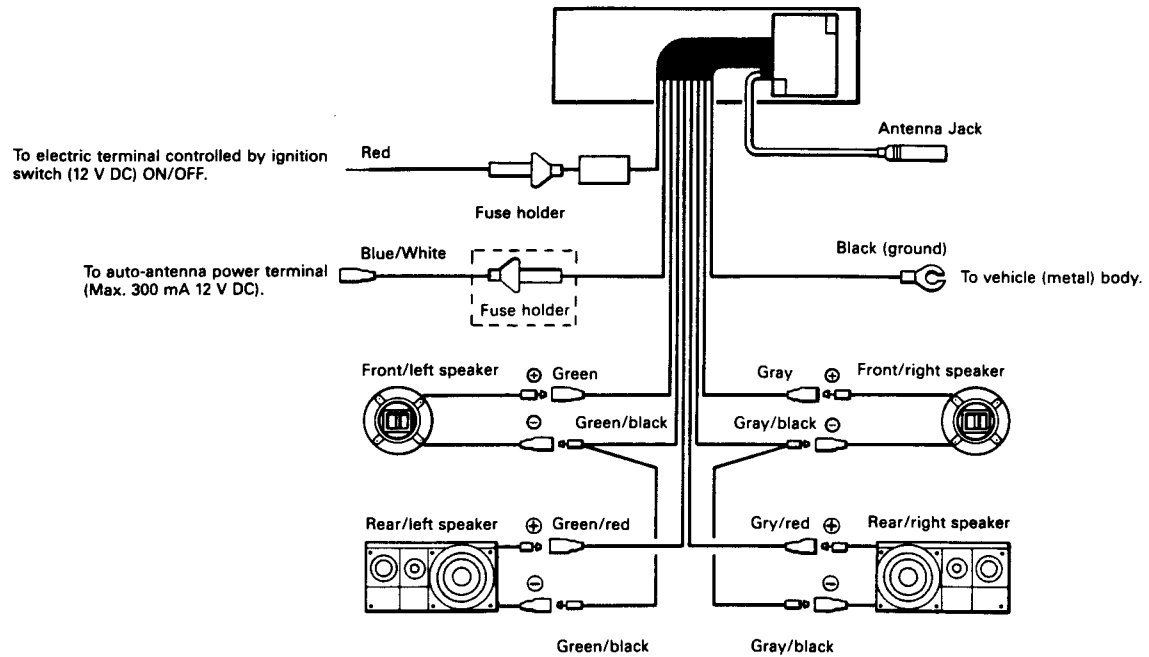


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2-speaker system

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4-speaker system



6. DISASSEMBLY

• Removing the Quick Release Handle Assy

1. Remove the two screws, and then remove the quick release handle Assy.

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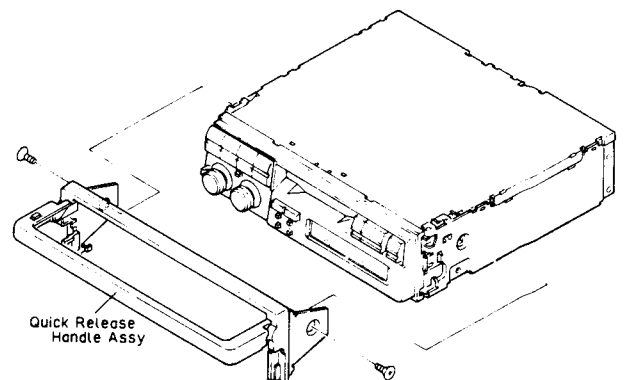


Fig. 1

- **Removing the Case**

1. Insert and turn a flat screwdriver to remove the case.
2. Raise the case to remove.

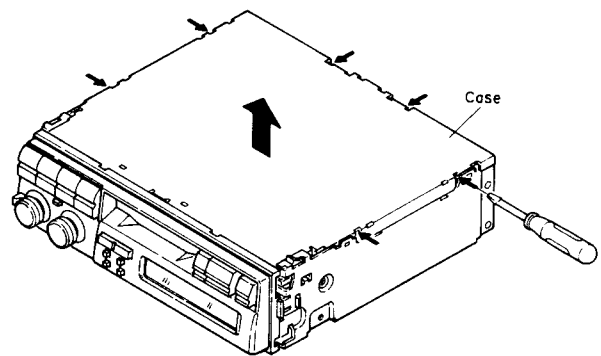


Fig. 2

- **Removing the Grille Assy**

1. Remove the three knobs.
2. Press the tabs at three locations, and then pull out the grille assy.
3. Disconnect the connector.

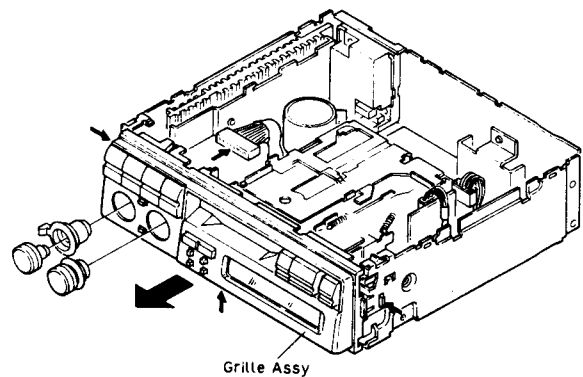


Fig. 3

- **Removing the Key Board Unit**

1. Remove the three screws.
2. Press the tabs at two locations indicated by arrows, and then pull out the key board Unit.

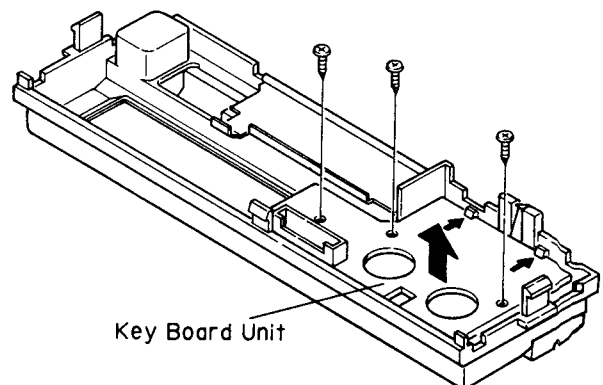
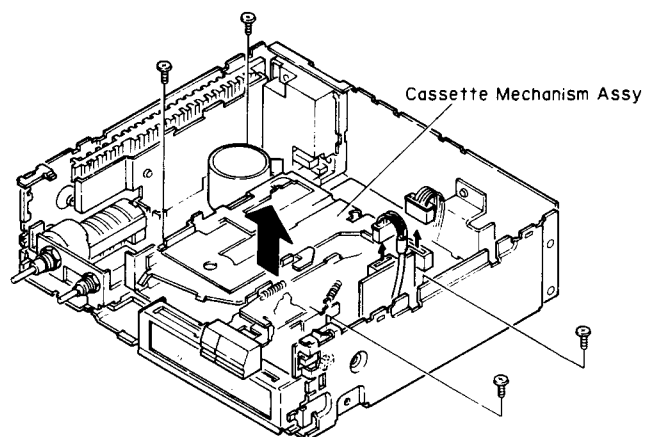


Fig. 4

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- **Removing the Cassette Mechanism Assy**

1. Remove the four screws.
2. Disconnect the two connectors.
3. Remove the cassette mechanism assy.



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Fig. 5

- **Removing the Tuner Amp Unit**

1. Remove the two screws A, and then remove the cord assy.
2. Remove the four screws.
3. Unbend the tab at a location indicated by arrow until straight.
4. Raise up on tuner amp unit to remove it from chassis unit.

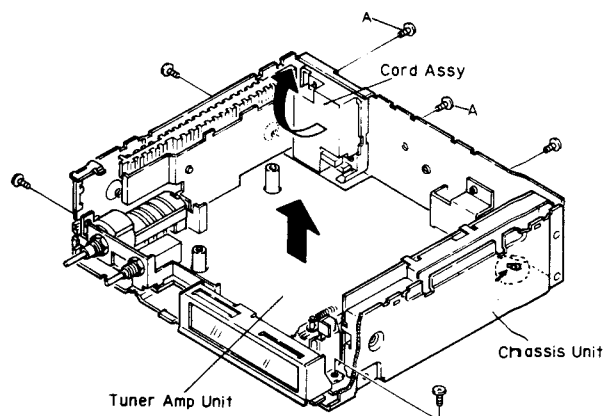


Fig. 6

7. ADJUSTMENT

NOTICE:

Select C1 so that total capacity of 80pF is attained from the direction of the receiver jack.

Z: Output impedance of SSG.

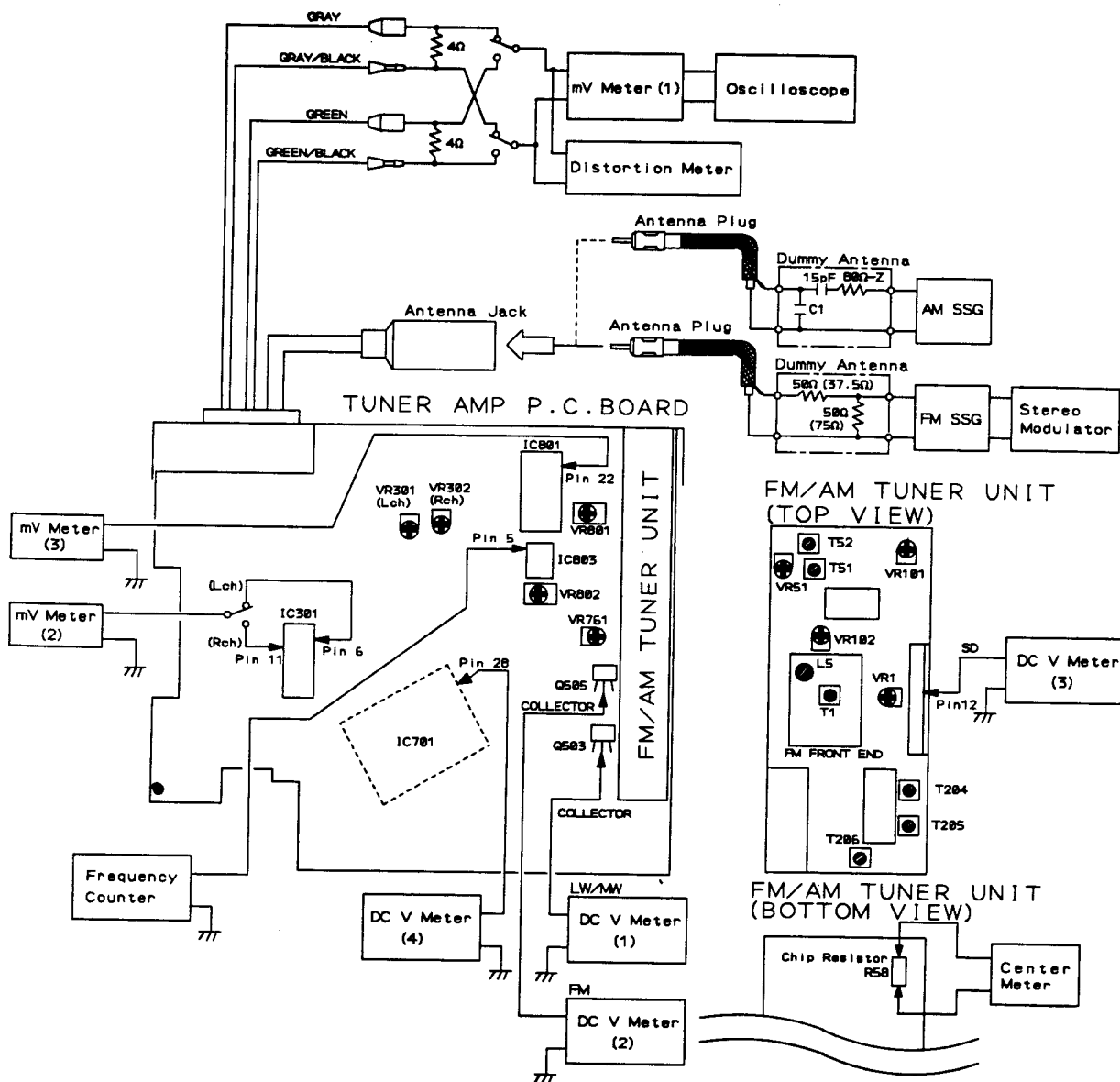


Fig. 7

DOLBY NR ADJUSTMENT

No.	Cassette Tape	Adjusting Point	Adjustment Method (Switch Position)
1	NCT-150 (400Hz, 200nwb/m)	VR301 (Lch) VR302 (Rch)	mV Meter (2) : $-7.2\text{dBs} \pm 1\text{dB}$ (337mV) (DOLBY NR Switch:OFF) (METAL Switch:OFF)

MW/LW ADJUSTMENT

	No.	AM SSG (400Hz, 30%)		Displayed Frequency (kHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency (kHz)	Level (dB μ V)			
Tuning Volt	1	(MW MODE)		1,602	—	Verify that DC V Meter (1) is less than 6.5V.
	2	(LW MODE)		153	—	Verify that DC V Meter (1) is more than 2.0V.
IF	1	999	20—25	999	T204, 205, 206	mV Meter (1) :Maximum

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FM ADJUSTMENT ※ Stereo MOD. : 1kHz, L+R=90% . Pilot=10%

	No.	FM SSG (400Hz, 100%)		Displayed Frequency (MHz)	Adjusting - Point	Adjustment Method (Switch Position)
		Frequency (MHz)	Level (dB μ V)			
IF	1	98.1	60	98.1	T51	Center Meter:0
	2	98.1	60	98.1	T52	Distortion Meter:Minimum
	3	Repeat No.1-2 alternately so that the center meter indicates the 0 output and distortion meter indicates minimum output.				
Front End	1			108.0	L5	DC V Meter (2) : $6.2 \pm 0.2\text{V}$
	2			87.5	—	Verify that DC V Meter (2)) is more than $2.1 \pm 0.6\text{V}$
	3	98.1	8	98.1	T1	Distortion Meter:Minimum
Soft Mute	1	98.1	60	98.1	—	mV Meter (1) :A dB
	2	98.1	10	98.1	VR102	mV Meter (1) :A-3dB
ARC	1	98.1※	35	98.1	VR101	mV Meter (1) :Separation 5dB
SD	1	98.1	17	98.1	VR51	DC V Meter (3) :Approx. 5V
	2	98.1	16	98.1	—	Verify that DC V Meter (3) is approx. 0V.
	3	98.1	55	98.1	VR1	DC V Meter (3) :Approx. 5V
	4	98.1	54	98.1	—	Verify that DC V Meter (3) is approx. 0V.
SL	1	106.1	30	106.1	VR761	DC V Meter (4) : $1.2 \pm 0.05\text{V}$

RDS/SDK ADJUSTMENT

	No.	FM SSG (400Hz, 100%)		Displayed Frequency (MHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency (MHz)	Level (dB μ V)			
57k BPF	1	98.1		98.1	VR801	mV Meter (3) :Maximum
DK PLL	1	—	—	—	VR802	Frequency Counter: $125 \pm 1\text{Hz}$

8. BLOCK DIAGRAM

• KEH-6000RDS

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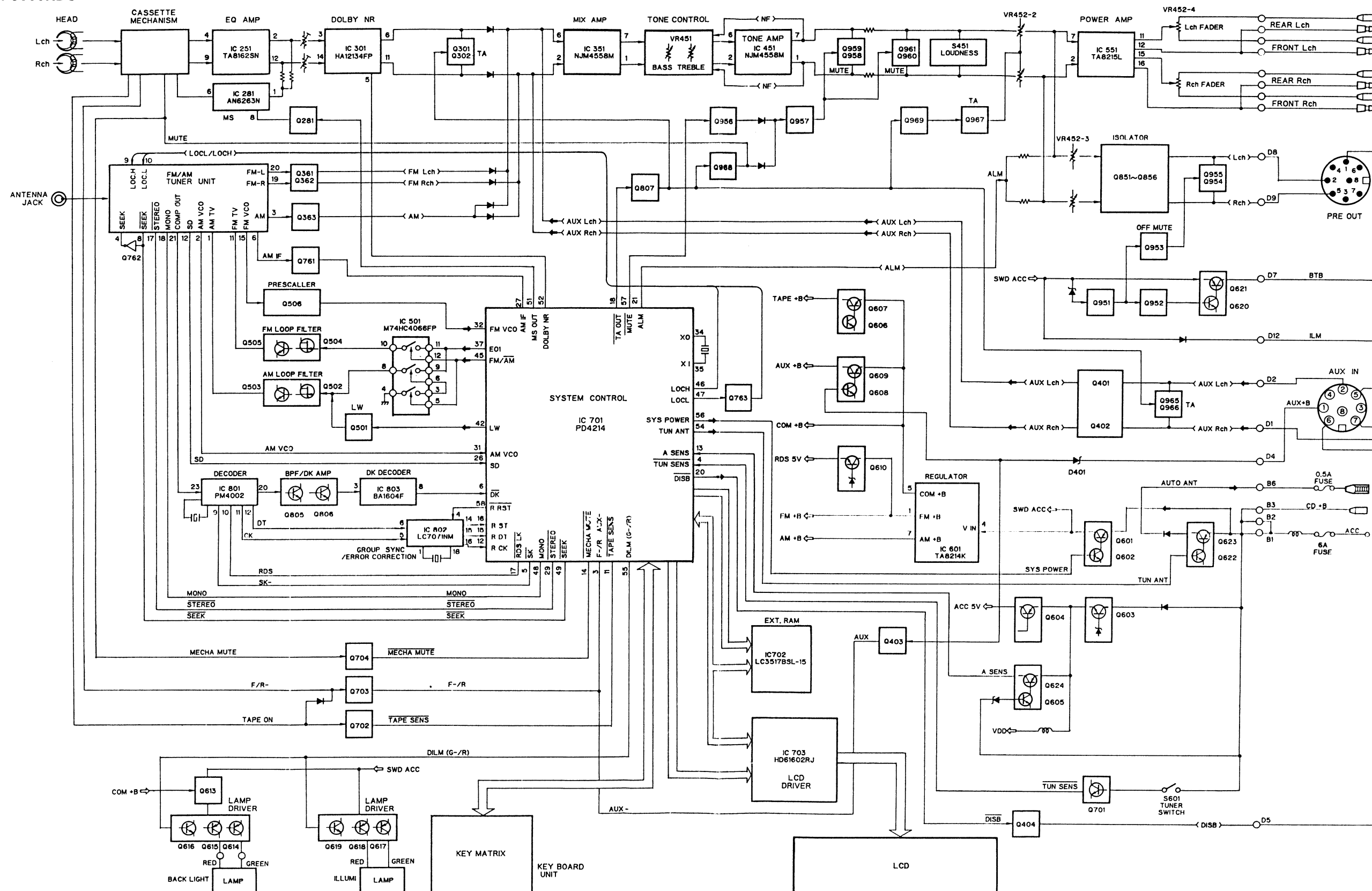
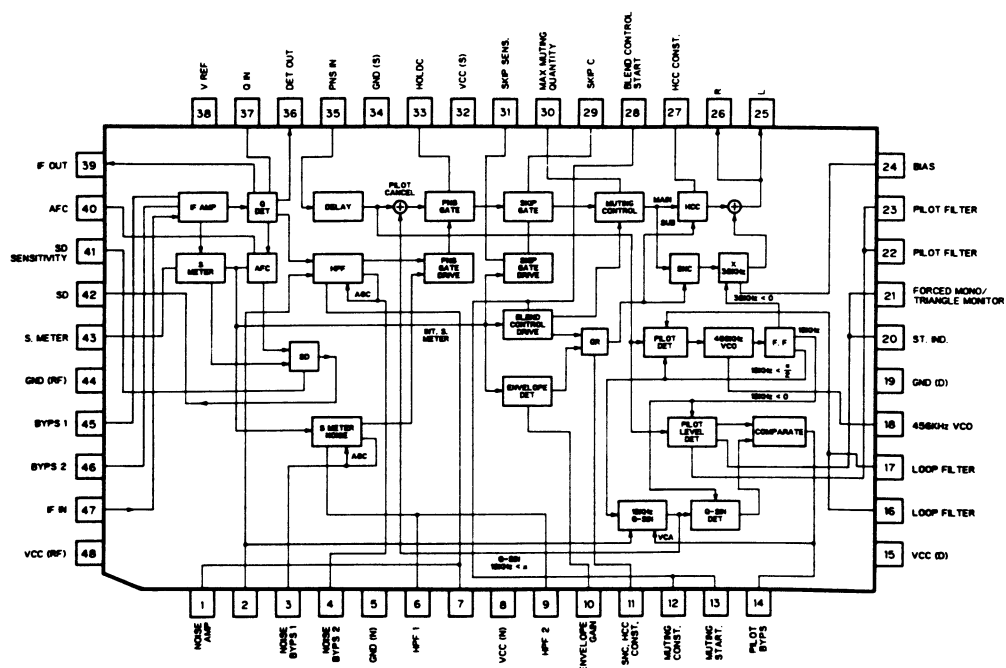


Fig. 8

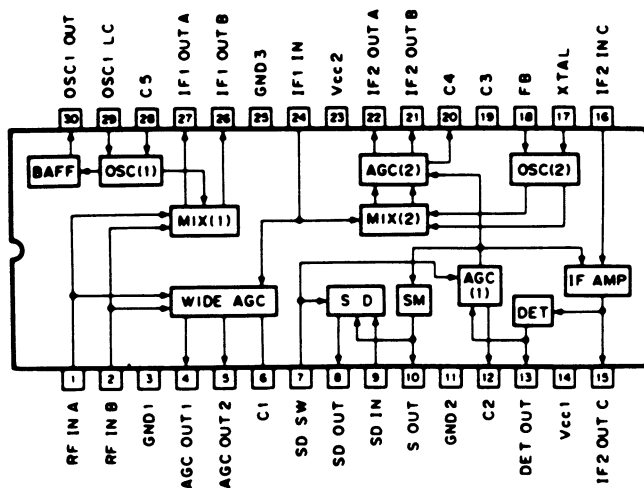
- **ICs**

IC51:PA4012

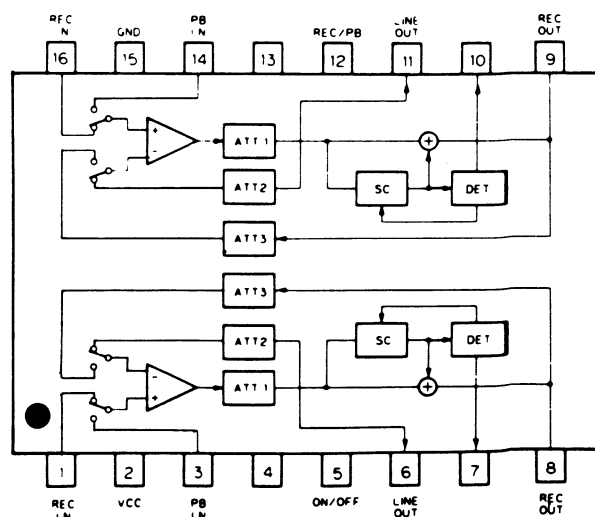


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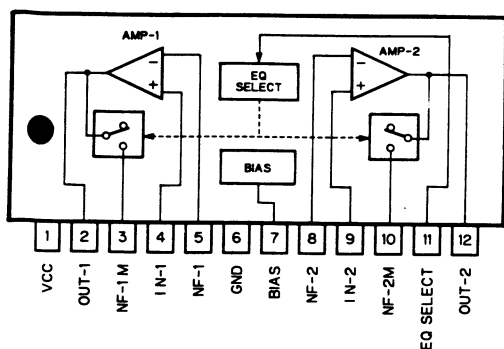
IC201:PA4010



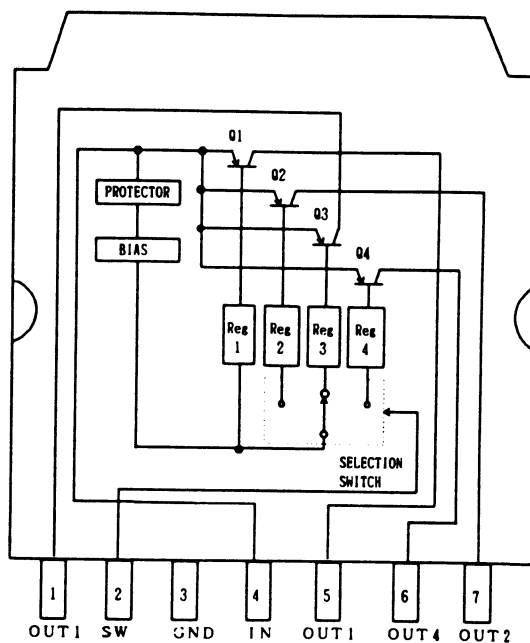
IC301:HA12134FP



IC251:TA8162SN

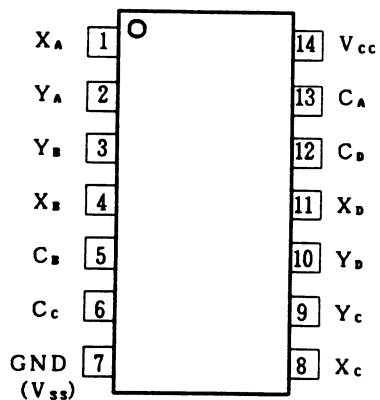


IC601:TA8214K

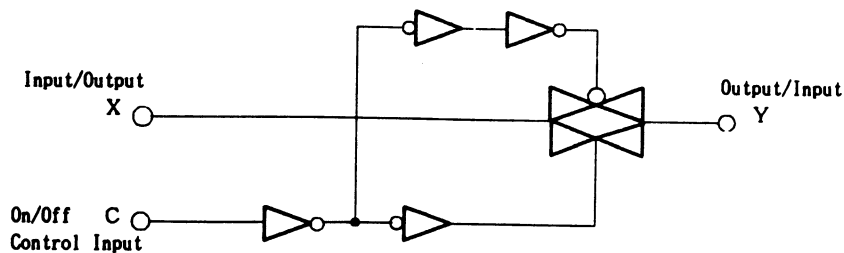
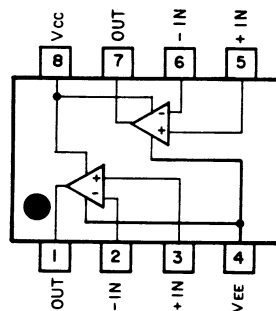


www.manualscenter.com

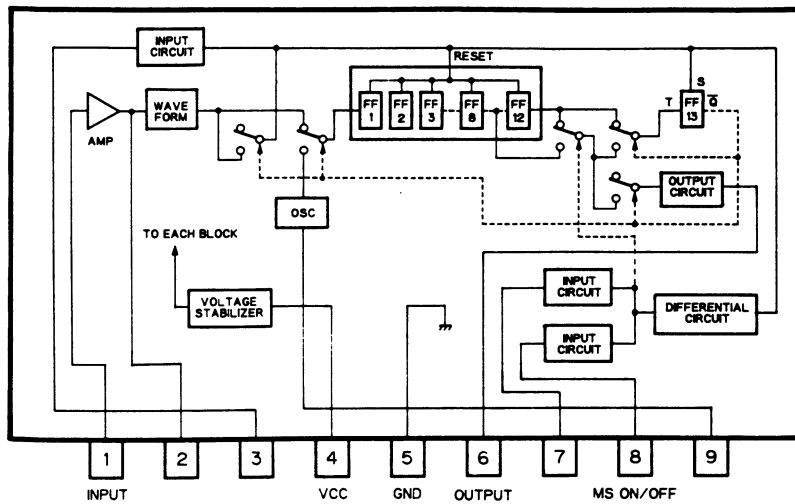
IC501:M74HC4066FP



IC351,451:NJM4558M

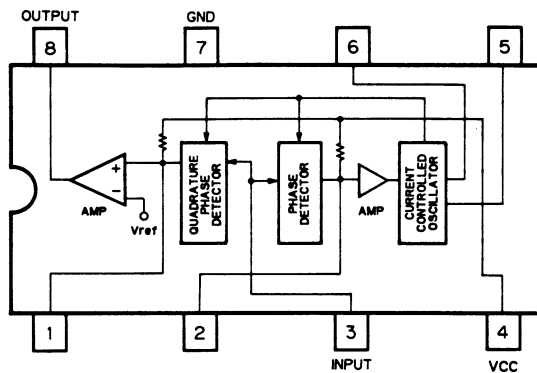


IC281:AN6263N

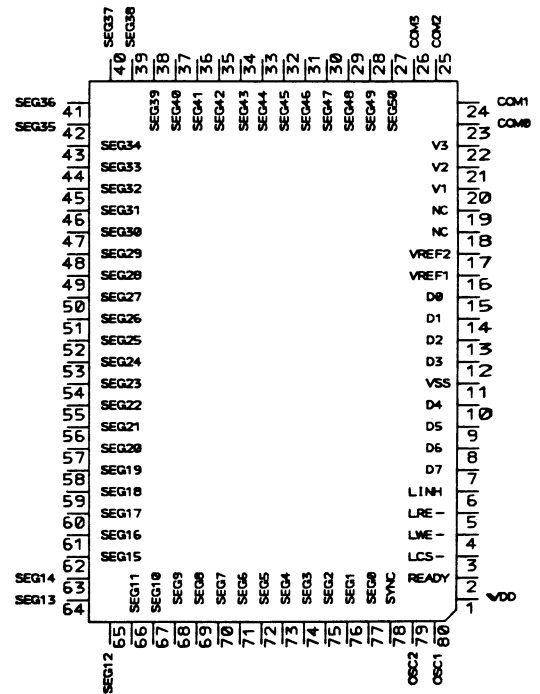


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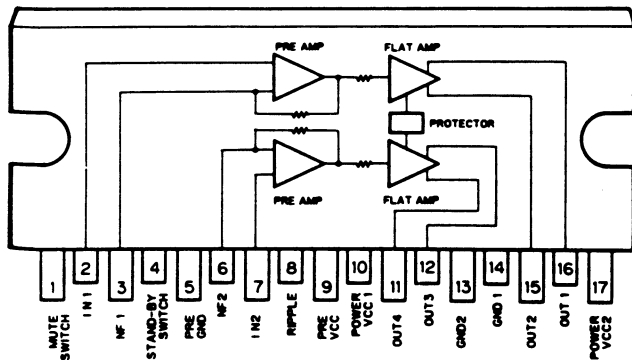
IC803:BA1604F



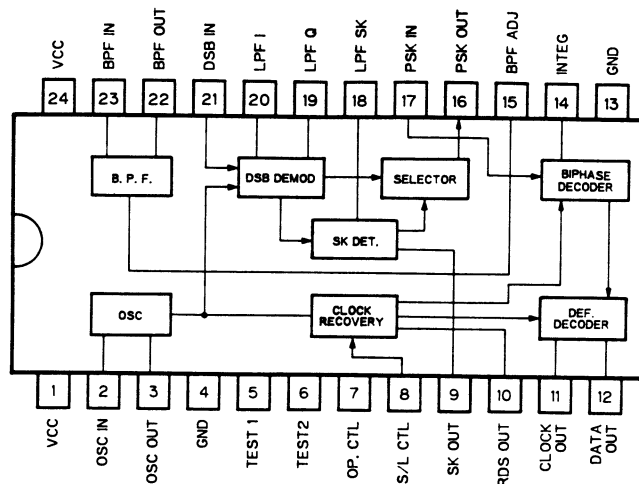
IC703:HD61602RJ



IC551:TA8215L

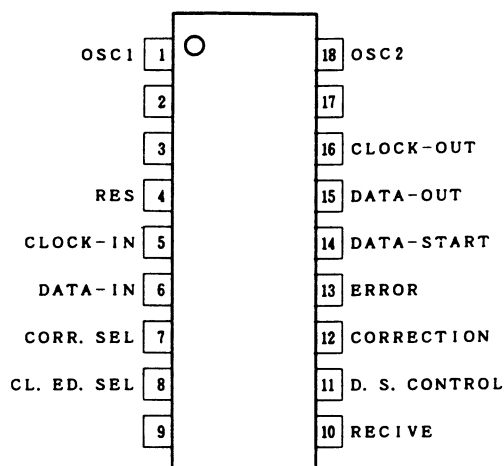


IC801:PM4002



Pin Functions (PM4002)

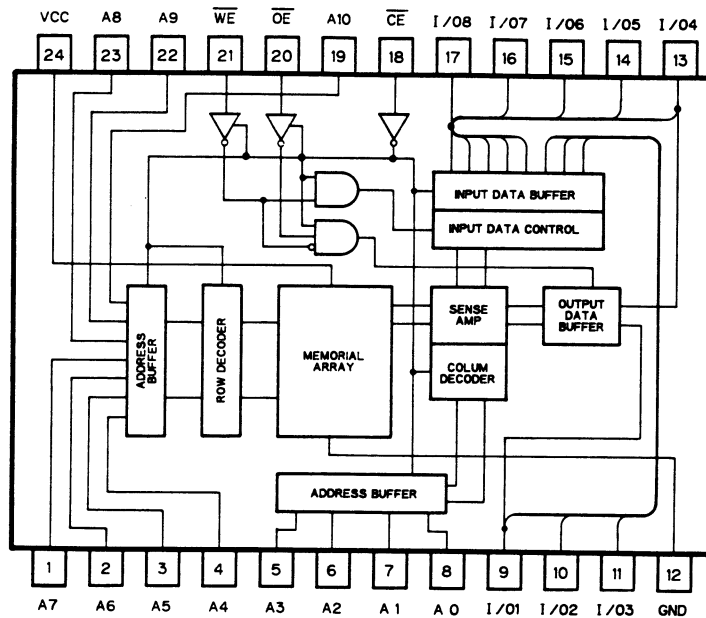
Pin No.	Pin Name	I/O	Function and Operation
1	VCC		Power supply for digital circuit
2	OSC IN	Input	Crystal oscillating element connection pin
3	OSC OUT	Output	Crystal oscillating element connection pin
4	GND		Ground for digital circuit
5	TEST 1	Input	Test input pin
6	TEST 2	Output	Test output pin
7	OP. CTL	Input	Operation control input pin. "H":Operation "L":Stop
8	S/L CTL	Input	Sync signal detection mode control input pin. "H":Short mode "L":Long mode
9	SK OUT	Output	SK detection output pin Outputs low signal during SK detection .
10	RDS OUT	Output	RDS sync signal detection output pin
11	CLOCK OUT	Output	Bit rate clock output pin. "L":Stop
12	DATE OUT	Output	RDS data output pin. "L":Stop
13	GND		Ground for analog circuit
14	INTEG		Integral filter pin
15	BPF ADJ		Band pass filter fc adjustment
16	PSK OUT	Output	Bi-phase signal output pin
17	PSK IN	Input	Bi-phase decoder input pin
18	LPF SK		Low pass filter for SK detection
19	LPF Q		Low pass filter for A/D detector
20	LPF I		Low pass filter for sync signal detector
21	DSB IN	Input	DSB demodulator input pin
22	BPF OUT	Output	Band pass filter output pin
23	BPF IN	Input	Band pass filter input pin
24	VCC		Power supply for analog circuit



• Pin Functions (LC7071NM)

Pin No.	Pin Name	I/O	Function and Operation	Initial (when reset)
1	OSC1	Input	For connection of 4 MHz ceramic oscillator.	
18	OSC2	Output		
5	CLOCK-IN	Input	Decoded clock input for RDS.	High output
6	DATA-IN	Input	Decoded data input for RDS .	High output
7	CORR.SEL	Input	Error correction select input. Sets whether an error in RDS decoded data is to be corrected before output or not. Input = 0: Not corrected Input = 1: Error correction executed	High output
8	CL.ED.SEL	Input	Serial data clock polarity select input. Input = 0: Serial data output is valid at the rising edge of the output clock. (Serial data output changes at the falling edge of the output clock.) Input = 1: Serial data output is valid at the falling edge of the output clock. (Serial data output changes at the rising edge of the output clock.) Note: Setting is done when an RES signal is input.	High output
11	D.S.CONTROL	Input	Block data start signal control input. Input = 1: Data-start signal is output for all blocks. Input = 0: Data-start signal is output only for 2nd block.	High output
10	RECIVE	Output	RDS data reception output. After sync signal detection is complete, a low level signal is output only while serial data is being output. A high level signal is output normally. Open drain output.	High output
12	CORRECTION	Output	Error correction select output. A low level signal is output when an error in the serial output level has been corrected or when error correction is impossible, and a high level signal is output when error correction is not performed. Open drain output.	High output
13	ERROR	Output	Error present output. A low level signal is output when there is an error in the serial data output and it cannot be corrected. A high level signal is output when there is no error in the serial output data or when it has been corrected.	High output
14	DATA-START	Output	Block data start signal for serial data output.	High output
15	DATA-OUT	Output	Data output for serial data output.	High output
16	CLOCK-OUT	Output	Clock output for serial data output. Output with pull-up resistor.	High output
4	RES	Input	System reset input. For resetting and restarting, a low level signal should be input for more than 4 clock cycles.	

IC702:LC3517BSL-15



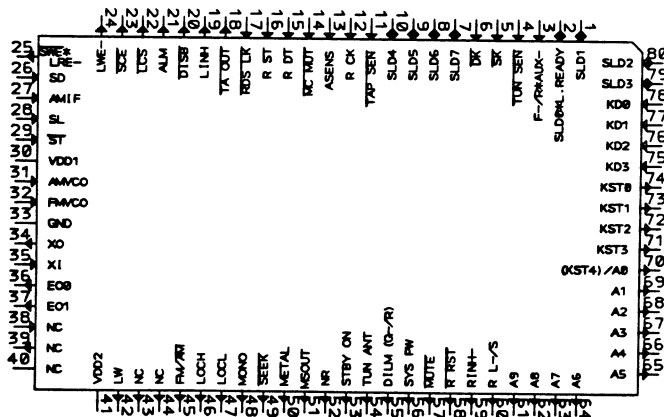
• Pin Functions (LC3517BSL-15)

	Pin18	Pin20	Pin21	Pin9-11, 13-17
Mode	\overline{CE}	\overline{OE}	\overline{WE}	I/O
Read cycle	L	L	H	Data output
Write cycle	L	X	L	Data input
Output disable	L	H	X	High impedance
No choice	H	X	X	High impedance

X: H or L

IC701:*PD4214

IC's marked by * are MOS type.
Be careful in handling them because they are very liable to be damaged by electrostatic induction.



• Pin Functions (PD4214)





Pin No.	Pin Name	I/O	Output Format	Function and Operation	STBY	RST
1	SLD1	Input/Output	C	SRAM, LCD data input/output pin	Hiz	Hiz
2	SLD0* L. READY	Input/Output	C	SRAM, LCD data input/output pin	Hiz	Hiz
3	F-/R*AUX-	Input	N	FWD /REV select input pin(when tape is on) AUX input pin(when tape is off)	Hiz	Hiz
4	TUN SEN	Input	N	Tuner power sense input pin	Hiz	Hiz
5	SK	Input	C	SK signal input pin	Hiz	Hiz
6	DK	Input	C	DK signal input pin	Hiz	Hiz
7-10	SLD7-SLD4	Input/Output	C	SRAM, LCD data input/output pins	Hiz	Hiz
11	TAP SEN	Input		Tape power sense input pin	Hiz	Hiz
12	R CK	Input		Data-clock input pin		
13	ASENS	Input	C	ACC power sense input pin		
14	MC MUT	Input	C	Cassette mechanism mute request input pin	Hiz	Hiz
15	R DT	Input	C	Error correction data input pin	Hiz	Hiz
16	R ST	Input	C	Data start input pin	Hiz	Hiz
17	RDS LK	Input	C	RDS signal lock input pin	Hiz	Hiz
18	TA OUT	Output	N	TA ,DK interruption mute output pin	Keep	Keep
19	LINH	Output	N	LCD inhibit output pin	Keep	Keep
20	DISB	Output	N	AUX control output pin	Keep	Keep
21	ALM	Output	C	Beep tone output pin	Keep	Keep
22	LCS	Output	C	LCD chip select output pin	Keep	Keep
23	SCE	Output	C	SRAM chip enable putput pin	Keep	Keep
24	SOE*LWE-	Output	C	SRAM output/LCD write enable putput pin	Keep	Keep
25	SWE*LRE-	Output	C	SRAM read write control/LCD read enable putput pin	Keep	Keep
26	SD	Input	C	SD signal input pin	Hiz	Hiz
27	AMIF	Input	C	AM IF count input pin	Hiz	Hiz
28	SL	Input	C	Signal level input pin	Hiz	Hiz
29	ST	Input	C	Stereo signal input pin	Hiz	Hiz
30	VDD1			Device power supply pin		
31	AM VCO	Input		AM VCO signal input pin		
32	FM VCO	Input		FM VCO signal input pin		
33	GND			GND		
34	X0	Output	C	Crystal oscillating element connection pin		
35	X1	Input	C	Crystal oscillating element connection pin		
36	E00	Output	C	PLL error putput pin		
37	E01	Output	C	PLL error putput pin		
38-40	NC					
41	VDD2			Device power supply pin		
42	LW	Output	C	Loop filter switching output pin. "H":LW	Keep	Keep
43, 44	NC					
45	FM/AM	Output	C	FM/AM power select output pin. "H":FM	L	Keep
46	LOCH	Output	C	Local H setup output pin	Keep	Keep
47	LOCL	Output	C	Local L setup output pin	Keep	Keep
48	MONO	Output	C	Forced mono output pin	Keep	Keep
49	SEEK	Output	C	SEEK output pin Outputs high signal during SEEK operation.	L	Keep

Pin No.	Pin Name	I/O	Output Format	Function and Operation	STBY	RST
50	METAL	Output	C	Tape METAL select output pin. "H":METAL	L	Keep
51	MSOUT	Output	C	Tape MS output pin. Outputs during MS operation.	L	Keep
52	NR	Output	C	Tape Dolby NR output pin	L	Keep
53	STBY ON	Output	C	Amplifier standby request output pin	L	Keep
54	TUN ANT	Output	C	Auto antenna output pin	L	Keep
55	DILM(G-/R)	Output	C	Dual illumination select output pin	L	Keep
56	SYS PW	Output	C	System(power amp)power supply control output pin	L	Keep
57	MUTE	Output	C	System mute output pin	L	Keep
58	R RST	Output	C	Data reset output pin	L	Keep
59	RINH-	Output	C	RDS data inhibit output pin	L	Keep
60	R L-/S	Output	C	Decoder time constant select output pin	L	Keep
61-69	A9-A1	Output	C	SRAM address output pins	L	Keep
70	(KST4)/A0	Output	C	Key strobe output pin/SRAM address output pin	L	Keep
71-74	KST3-KST0	Output	C	Key strobe output pins	L	Keep
75-78	KD3-KD0	Input	C	Key return input pins		
79, 80	SLD3, SLD2	Input/Output	C	SRAM, LCD data input/output pins	Hiz	Hiz

Output Format	Meaning
C	CMOS Output
N	N channel open drain

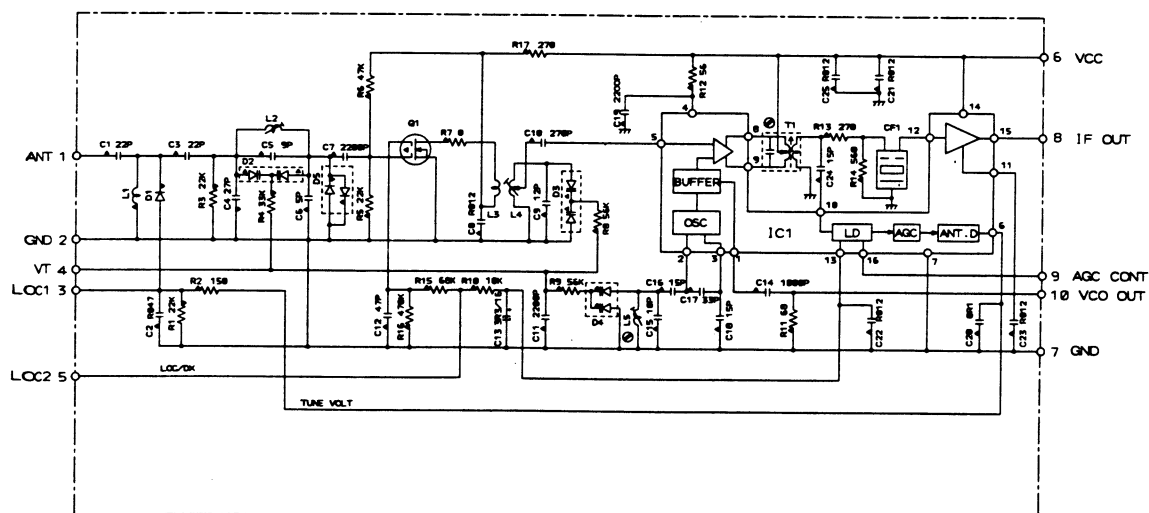
STBY/RST	Meaning
Hiz	High-impedance

• FM FRONT END (CWB1035)

NOTE:
 Chip Resistor
 Chip Capacitor
 Chip Diode
 Chip Transistor

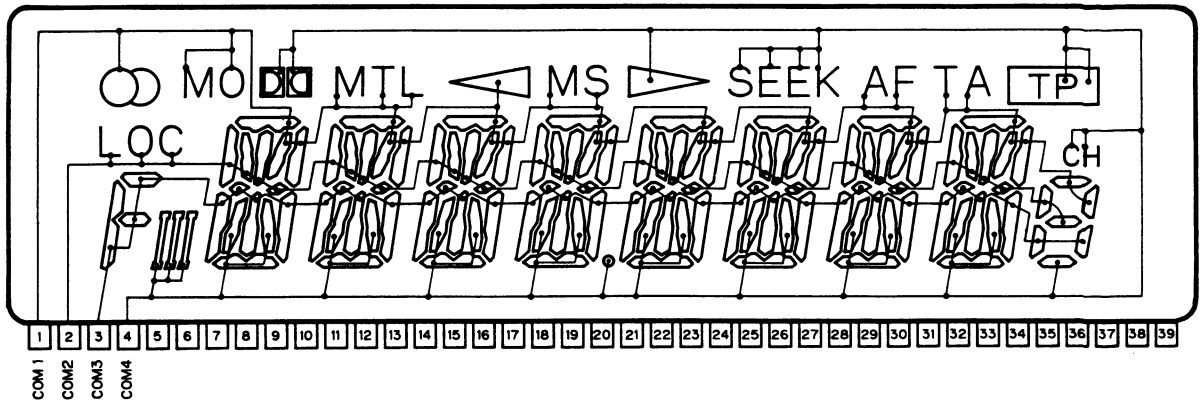
Decimal points for resistor and capacitor fixed values are expressed as:
 2.2-2R2
 0.022-R022

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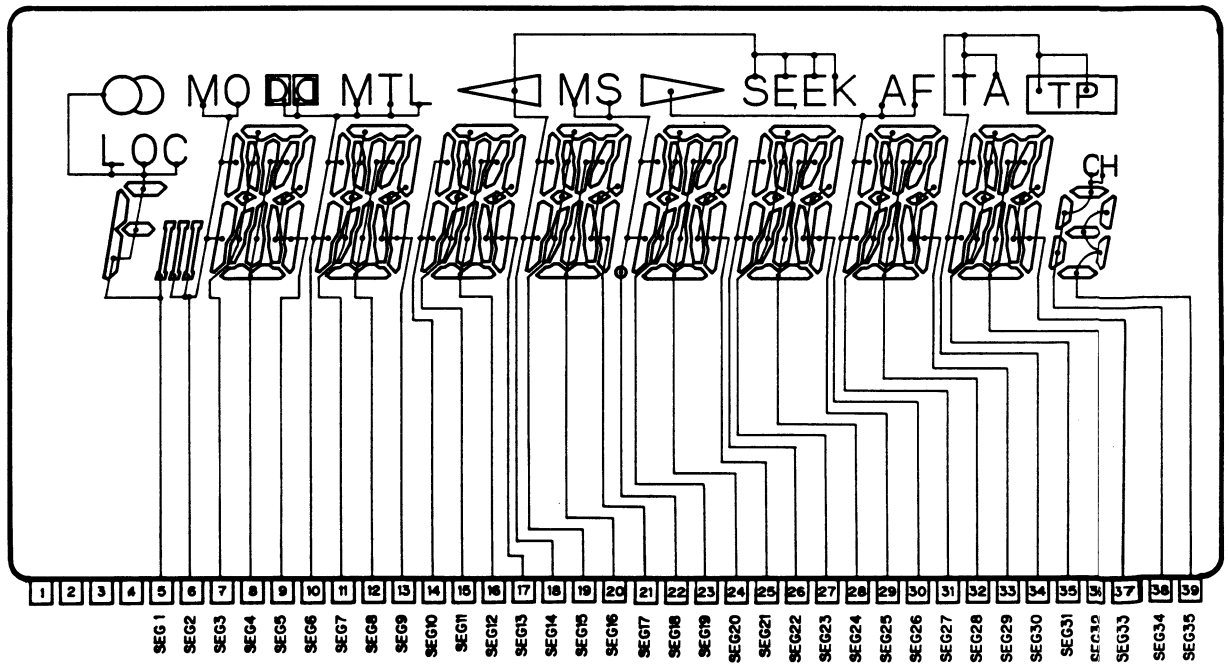
• LCD (CAW1098)

COMMON



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SEGMENT

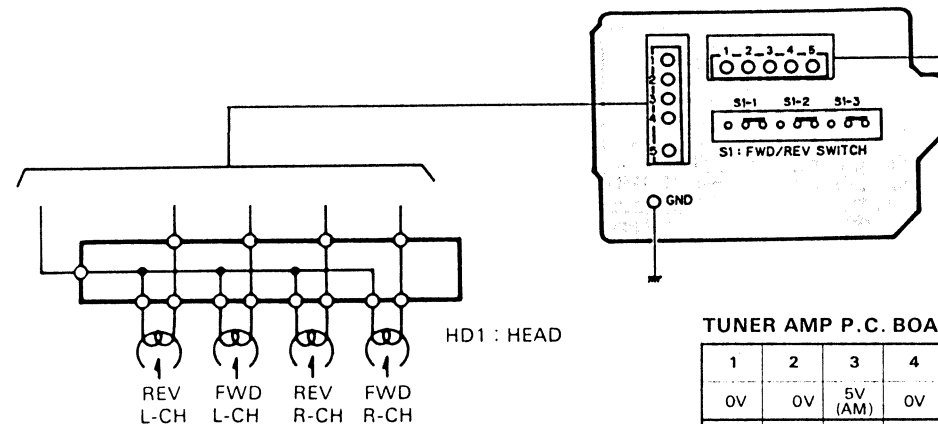


9. CONNECTION DIAGRAM (KEH-6000RDS)

TUNER AMP P.C. BOARD

P.C. BOARD UNIT

A



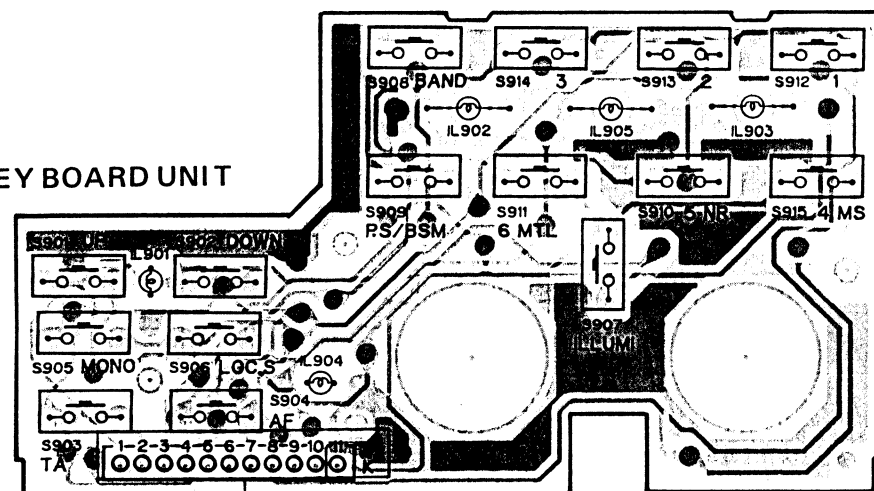
TUNER AMP P.C. BOARD: IC501

1	2	3	4	5	6	7	8
0V	0V	5V (AM)	0V	4.9V (AM)	6.0V (AM)	0V	2.2V
2.2V	2.2V	2.2V	4.5V	0V	5.1V		

TO FM/AM TUNER UNIT

B

KEY BOARD UNIT



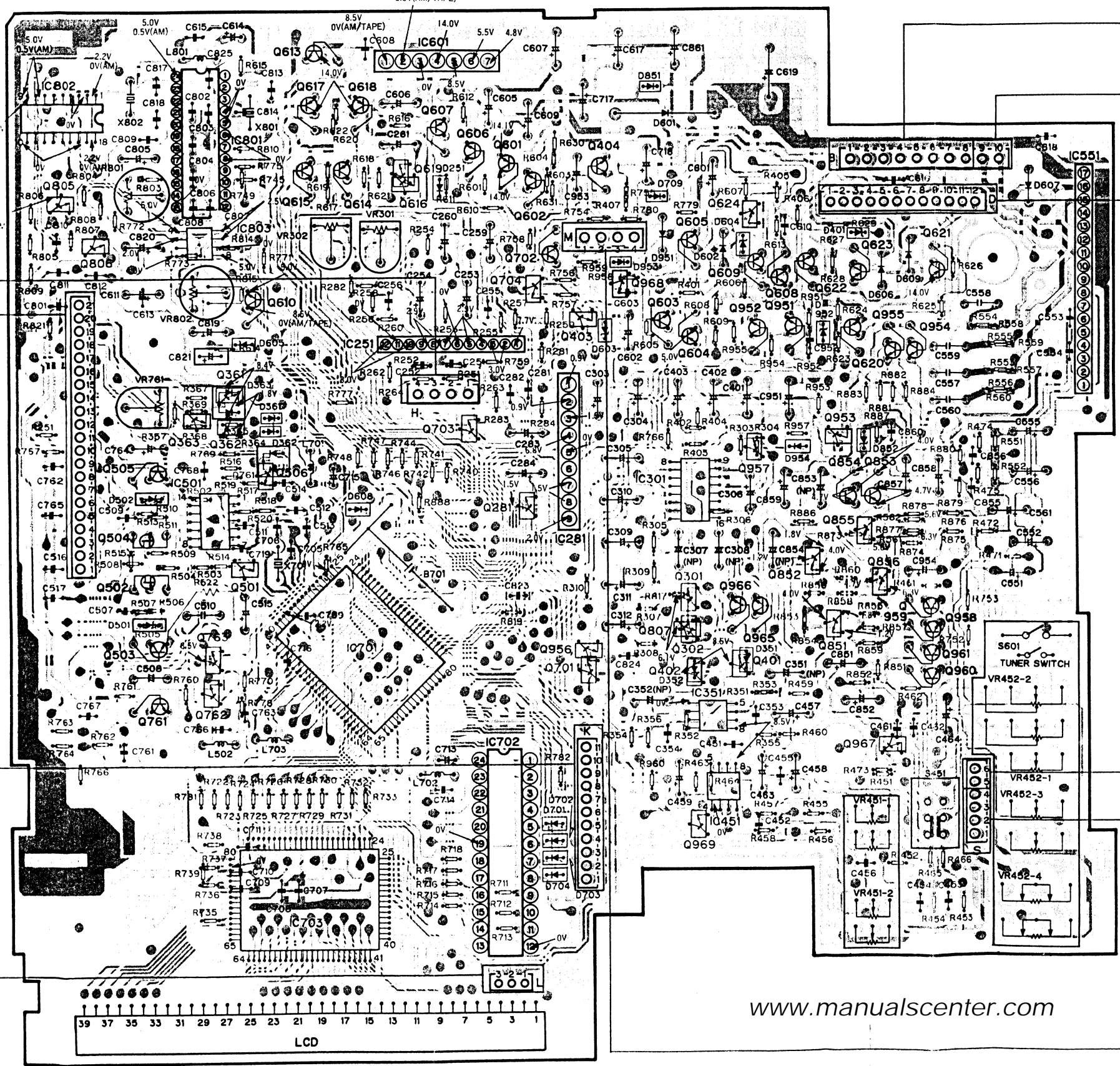
P.P.C. BOARD

IC 802 Q805 Q806 Q761 Q503 Q762 Q763 Q501 IC703 IC701 Q616 Q703 IC702 Q281 Q701 Q968 Q302 Q969 IC451 Q401 Q851 Q967 Q960 Q961 IC551

ADJ VR801 VR761 VR802 VR302 VR301

Q505 IC801 Q610 Q613 Q504 IC803 Q361 Q617 Q618 IC601 Q607 Q704 Q602 IC281 Q605 Q301 Q604 Q952 Q957 Q622 Q954 Q603 Q807 Q966 Q965 Q953 Q855 Q959 Q502 IC501 Q363 Q362 Q506 Q615 Q614 Q619 IC251 Q606 Q702 Q956 Q404 IC301 Q402 IC351 Q852 Q854 Q856 Q958 Q621 Q761 Q503 Q762 Q763 Q501 IC703 IC701 Q616 Q703 IC702 Q281 Q701 Q968 Q302 Q969 IC451 Q401 Q851 Q967 Q960 Q961 IC551

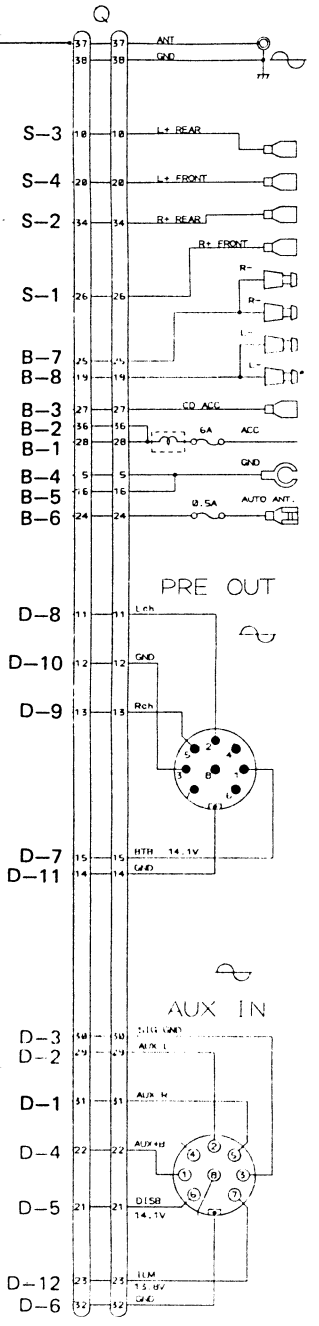
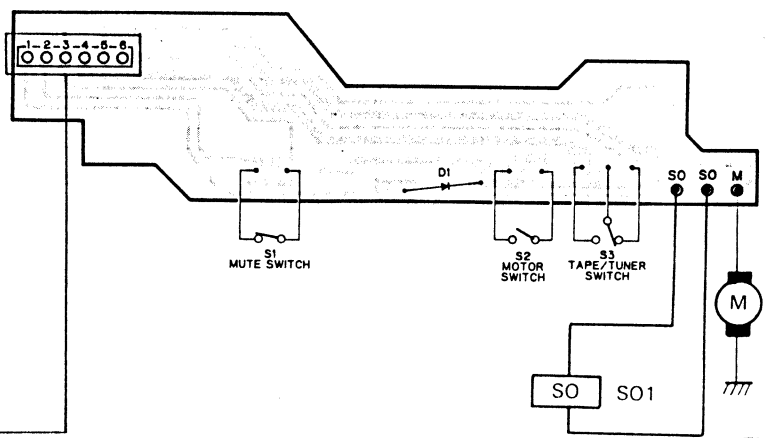
5.0V 0.5V(AM) 2.2V 0V(AM) 8.5V 0V(AM/TAPE) 14.0V 5.5V 4.8V



TUNER AMP
P.C. BOARD : IC301

1	2	3	4
4.0V	8.4V	4.0V	4.0V
5	6	7	8
0.7V	4.0V	1.3V	4.0V
9	10	11	12
4.0V	1.3V	4.0V	0.4V
13	14	15	16
0.9V	4.0V	0V	4.0V

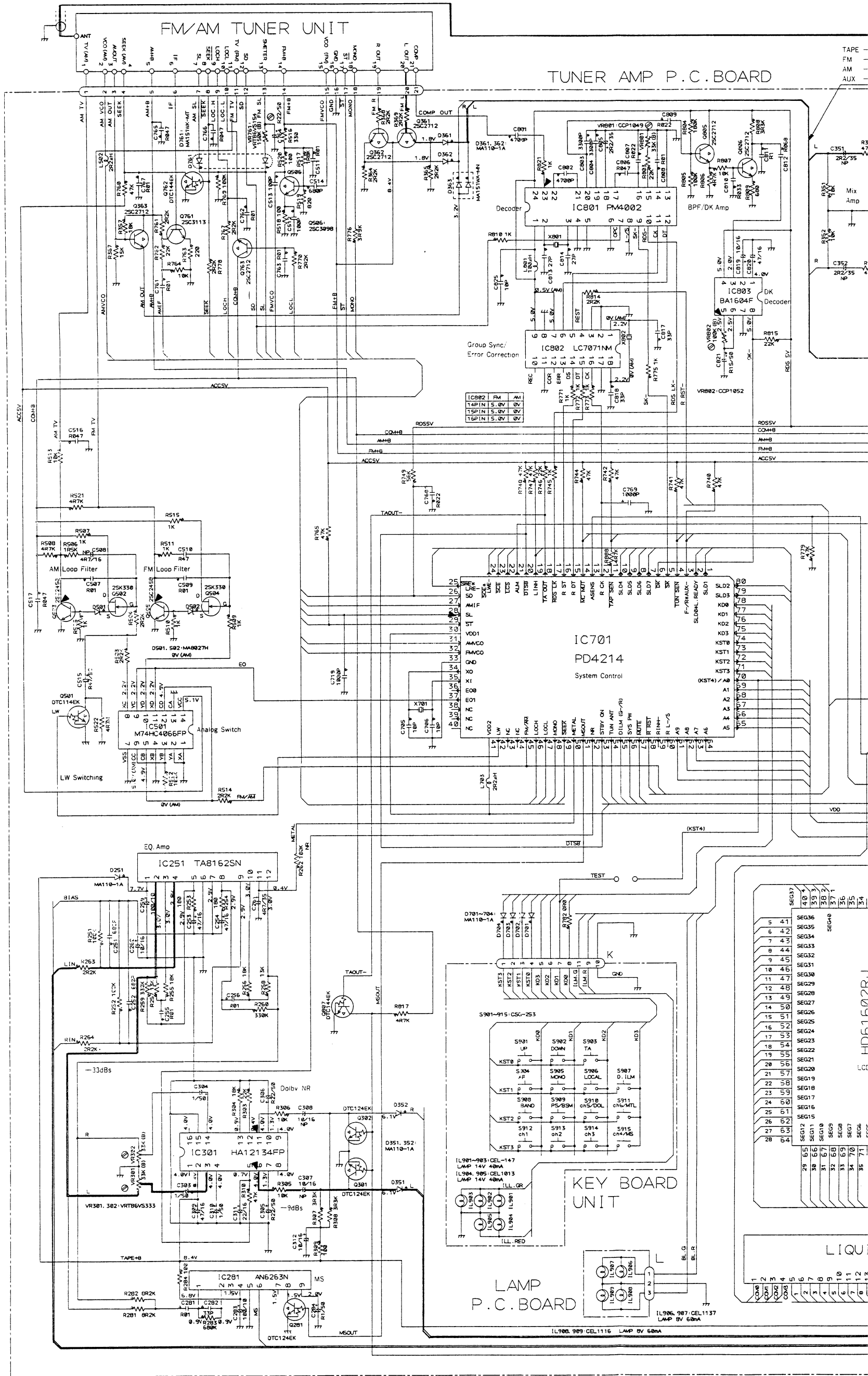
SWITCH P.C. BOARD



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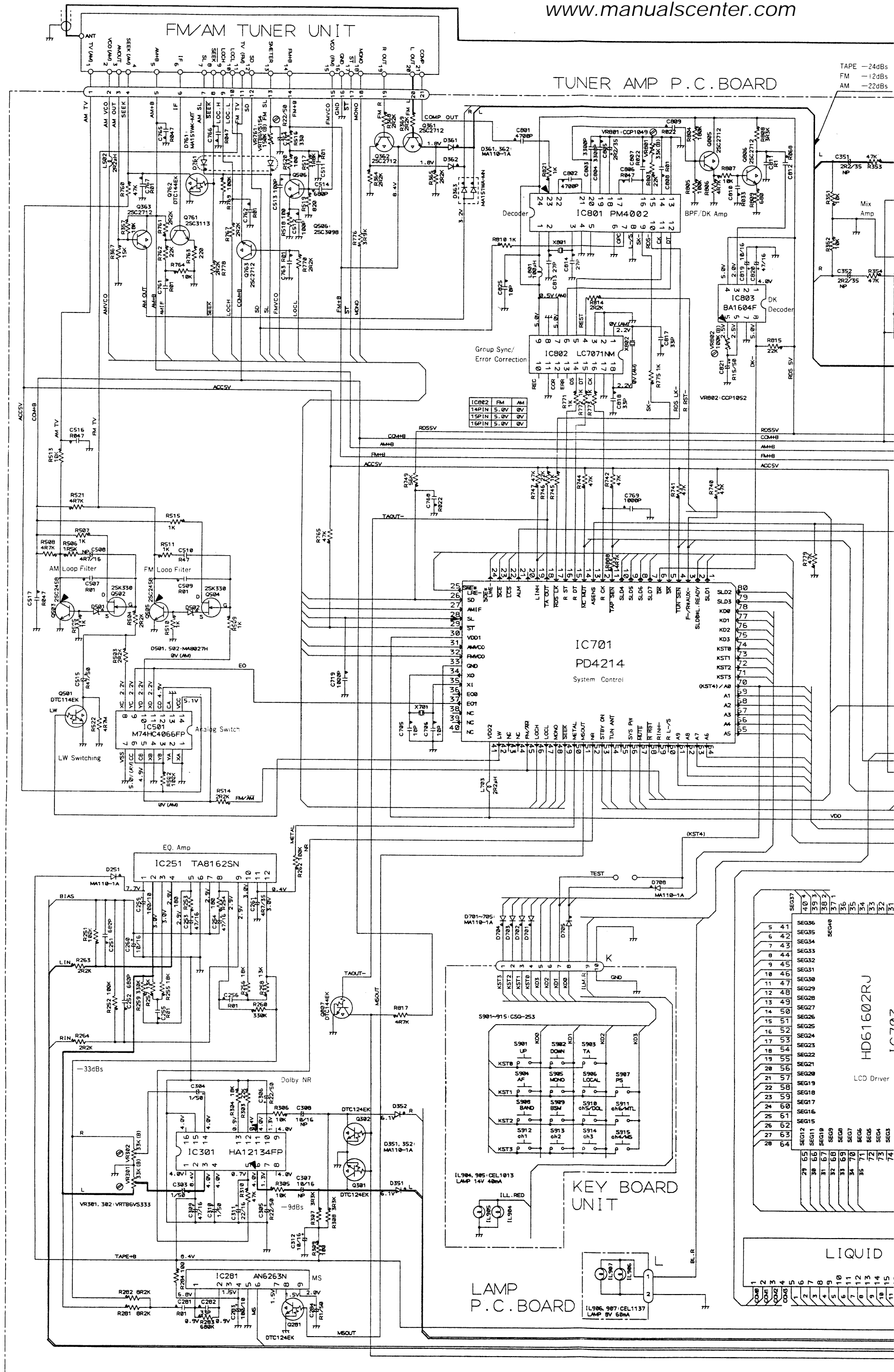
Fig. 9

10. SCHEMATIC CIRCUIT DIAGRAM



11. SCHEMATIC CIRCUIT DIAGRAM (KEH-4000RDS)

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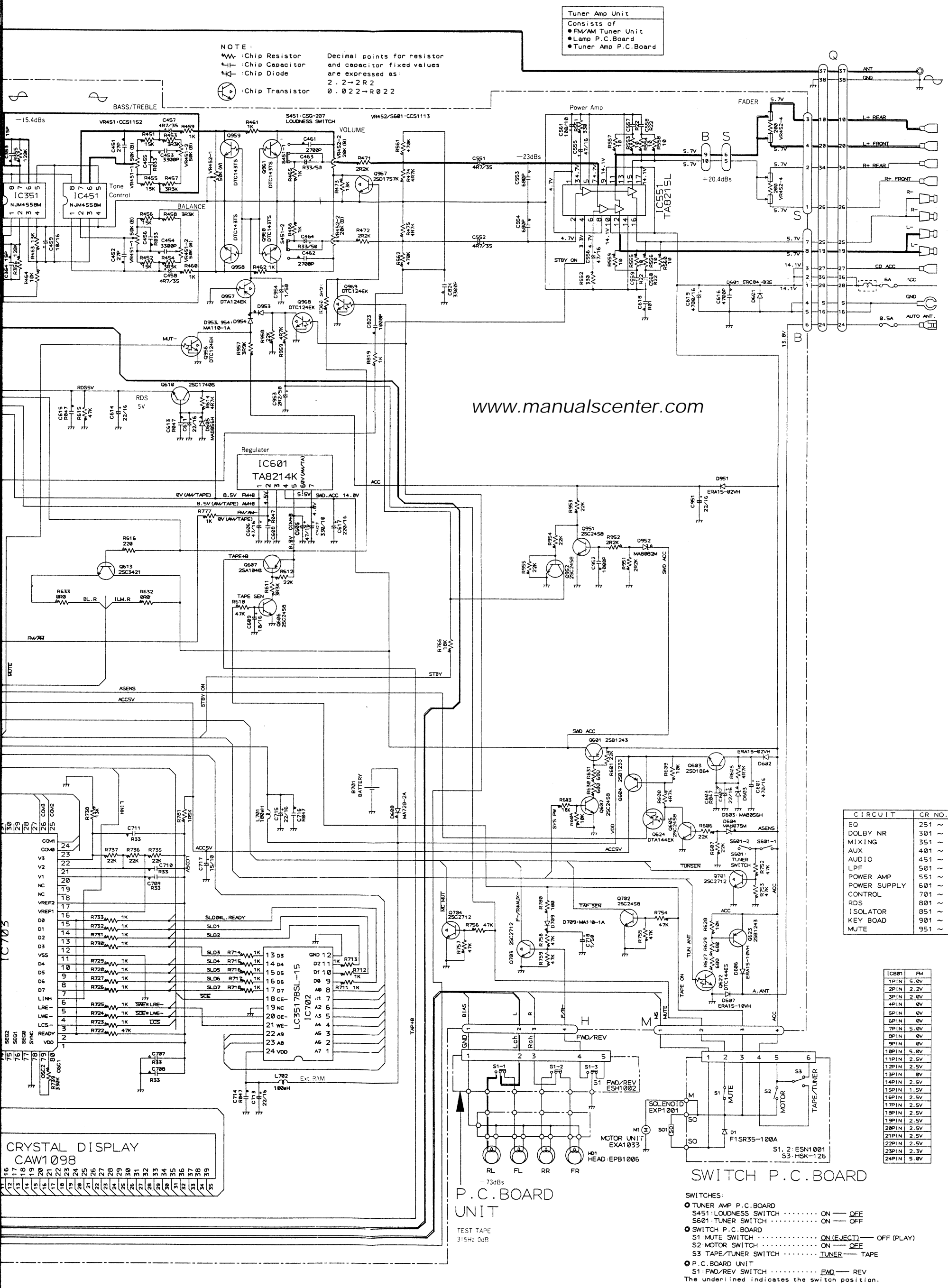
5

6

7

8

9



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CIRCUIT	CR NO.
EQ	251
DOLBY NR	301
MIXING	351
AUX	401
AUDIO	451
LPF	501
POWER AMP	551
POWER SUPPLY	601
CONTROL	701
RDS	801
ISOLATOR	851
KEY BOARD	901
MUTE	951

IC601	FM
1PIN	5.0V
2PIN	2.2V
3PIN	2.0V
4PIN	0V
5PIN	0V
6PIN	0V
7PIN	5.0V
8PIN	0V
9PIN	0V
10PIN	5.0V
11PIN	2.5V
12PIN	2.5V
13PIN	0V
14PIN	2.5V
15PIN	1.5V
16PIN	2.5V
17PIN	2.5V
18PIN	2.5V
19PIN	2.5V
20PIN	2.5V
21PIN	2.5V
22PIN	2.5V
23PIN	2.3V
24PIN	5.0V

SWITCH P.C. BOARD

- SWITCHES:
- TUNER AMP P.C. BOARD
 - S451: LOUDNESS SWITCH ON — OFF
 - S601: TUNER SWITCH ON — OFF
 - SWITCH P.C. BOARD
 - S1: MUTE SWITCH ON (EJECT) — OFF (PLAY)
 - S2: MOTOR SWITCH ON — OFF
 - S3: TAPE/TUNER SWITCH TUNER — TAPE
 - P.C. BOARD UNIT
 - S1: FWD/REV SWITCH FWD — REV
- The underlined indicates the switch position.

P.C. BOARD UNIT

TEST TAPE
315Hz 0dB

Fig. 11

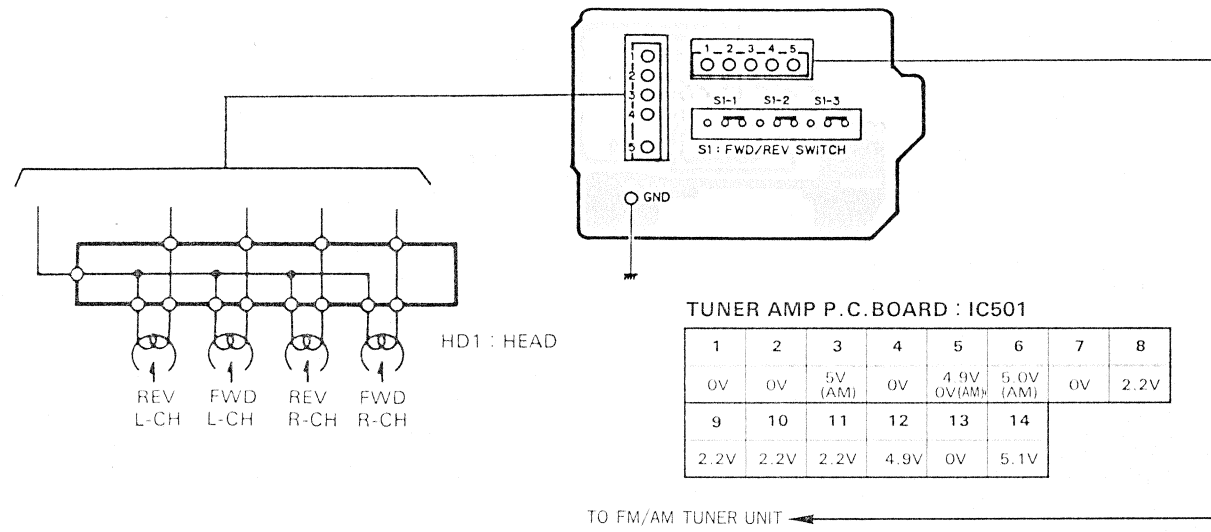
12. CONNECTION DIAGRAM (KEH-4000RDS)

P.C. BOARD UNIT

TUNER AMP P.C. BOARD

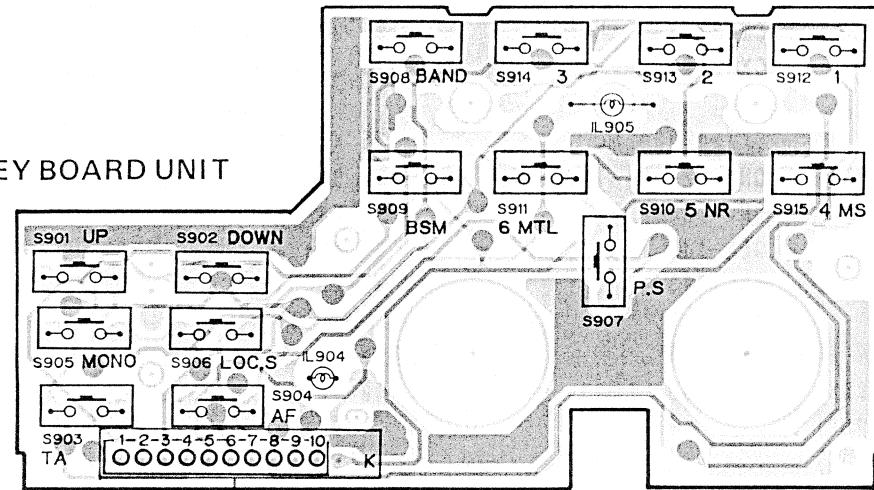
IC802 Q805 Q806 IC801 Q503 Q762 Q763 Q501 IC703 IC701
Q505 IC803 Q361 Q610 Q613 Q601 Q607 Q704 Q602 IC281 Q605 Q301 Q604 Q952 Q957 Q622 Q624 Q951 Q623 Q959 Q958 Q967 Q960 Q961
Q504 Q502 IC501 Q363 Q362 Q506 IC251 Q606 Q702 Q956 IC301 IC351 Q703 IC702 Q281 Q701 Q968 Q302 Q969 IC451

A



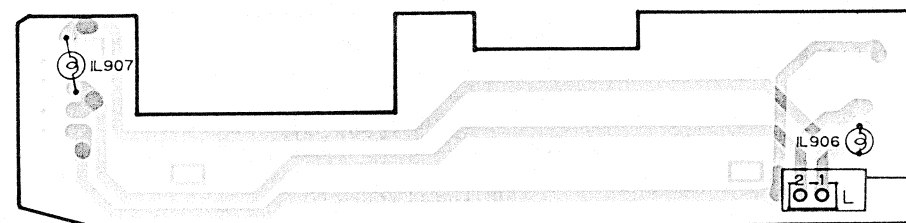
B

KEY BOARD UNIT



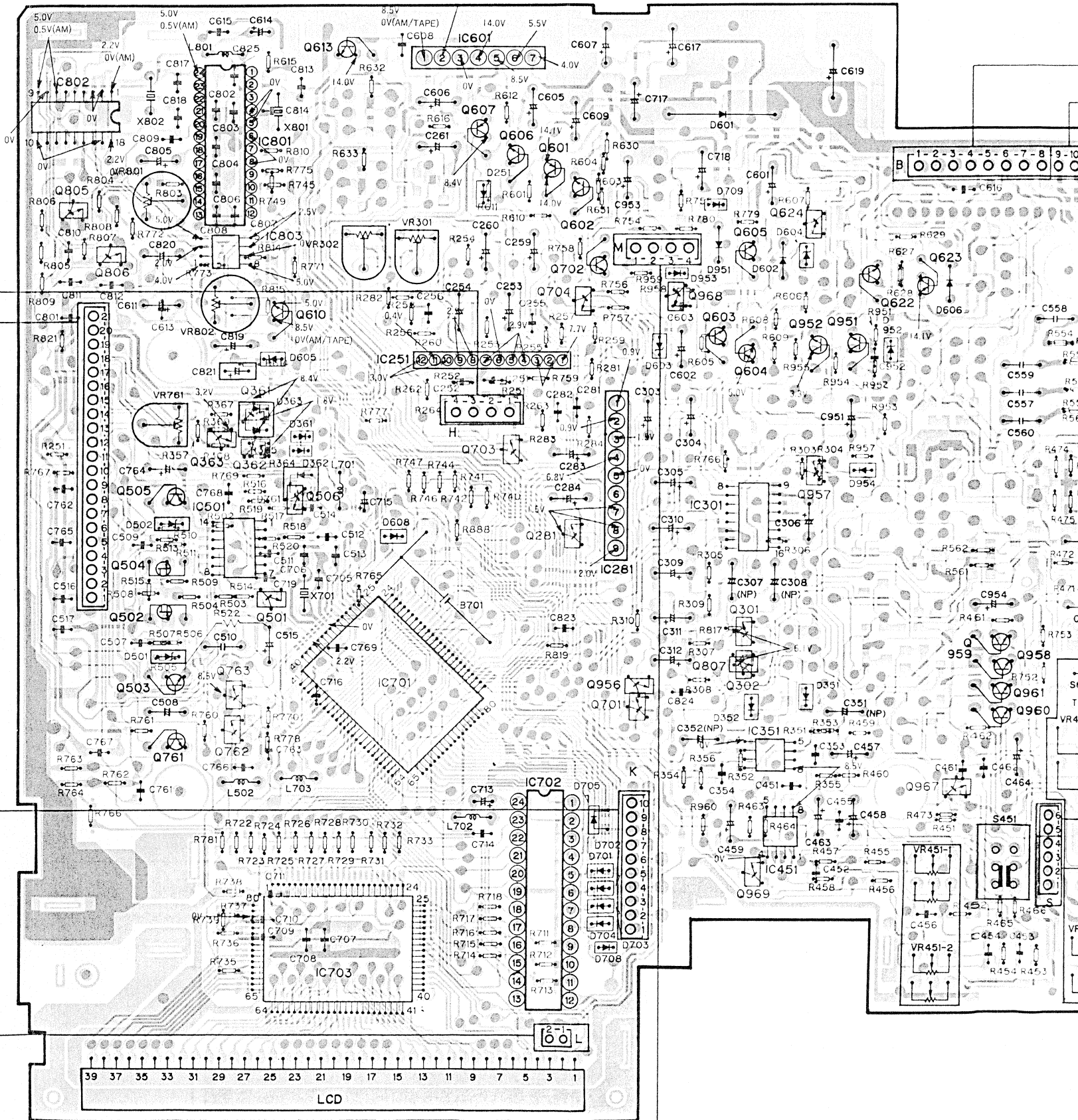
C

LAMP P.C. BOARD



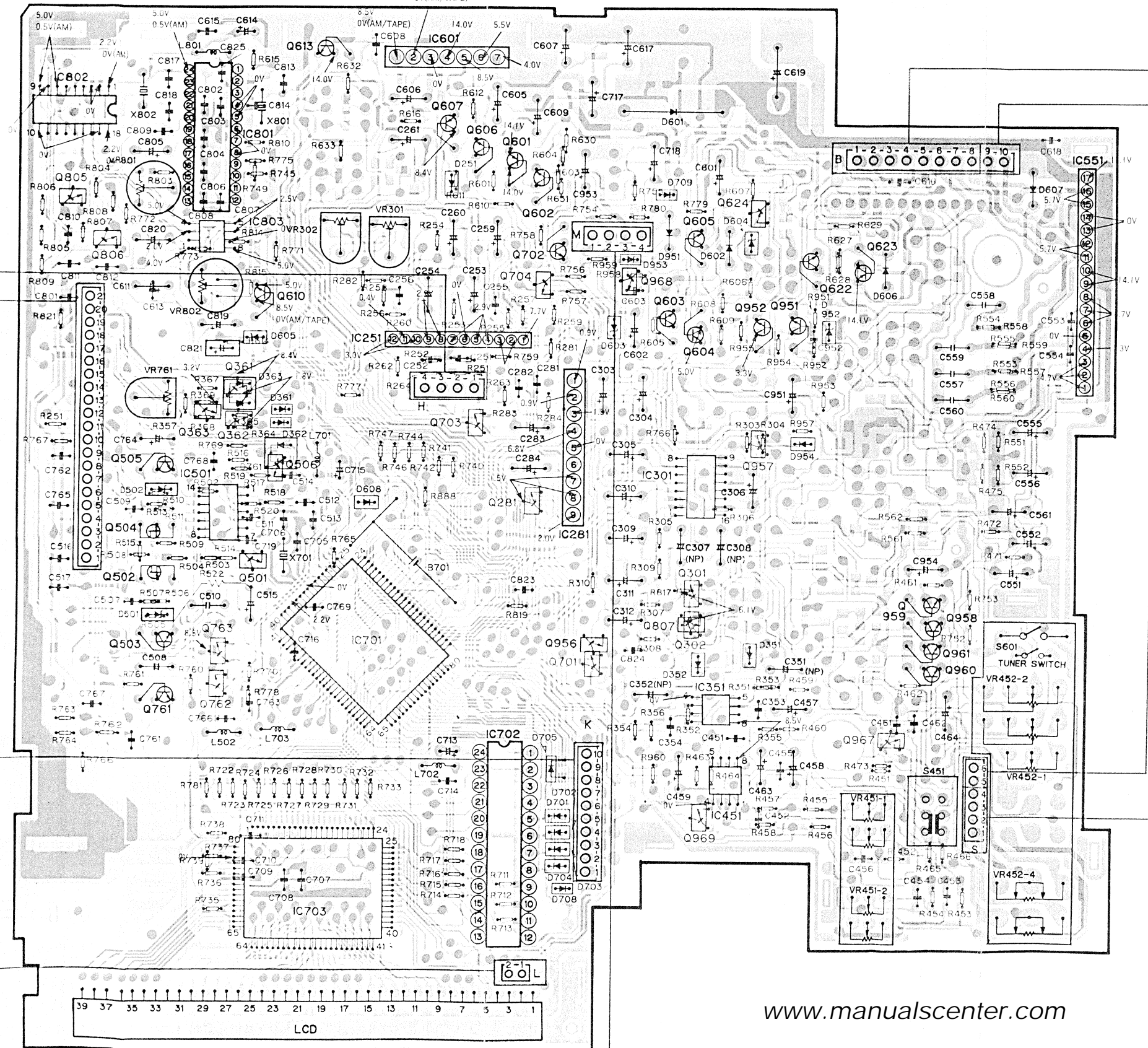
D

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MP P.C. BOARD Q505 IC801 Q610 Q613 Q601 Q624 Q623 Q605 Q301 Q604 Q952 Q957 Q622 Q504 IC803 Q361 IC601 Q607 Q704 Q602 IC281 Q603 Q807 Q459 Q502 IC501 Q363 Q362 Q506 IC251 Q606 Q702 Q956 IC301 IC351 Q958 IC Q Q805 Q806 Q761 Q503 Q762 Q763 Q501 IC703 IC701 Q703 IC702 Q281 Q701 Q968 Q302 Q969 IC451 Q967 Q960 Q961 IC551

ADJ VR801 VR761 VR802 VR302 VR301 4.5V 0V(AM/TAPE)



TO FM/AM TUNER UNIT

TUNER AMP
P.C. BOARD: IC301

1	2	3	4
4.0V	8.4V	4.0V	4.0V
5	6	7	8
0.7V	4.0V	1.3V	4.0V
9	10	11	12
4.0V	1.3V	4.0V	0.3V
13	14	15	16
0.9V	4.0V	0V	4.0V

SWITCH P.C. BOARD

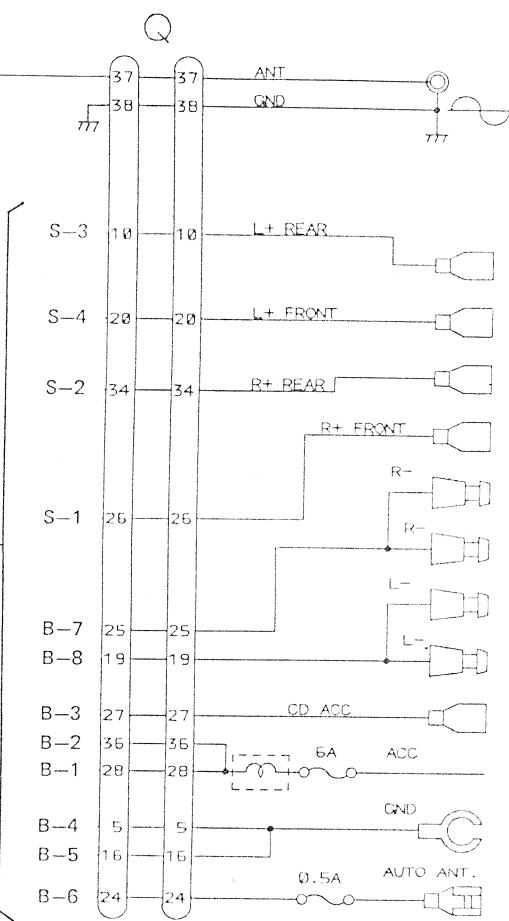
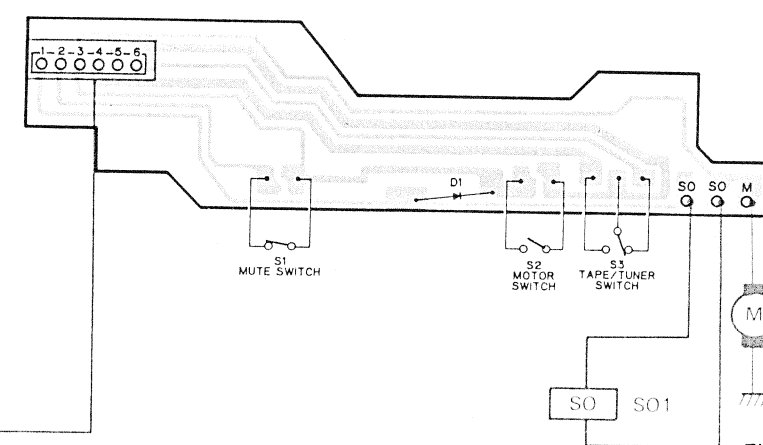


Fig. 12

13. CIRCUIT DIAGRAM AND P.C. BOARDS PATTERN

• FM/AM Tuner Unit

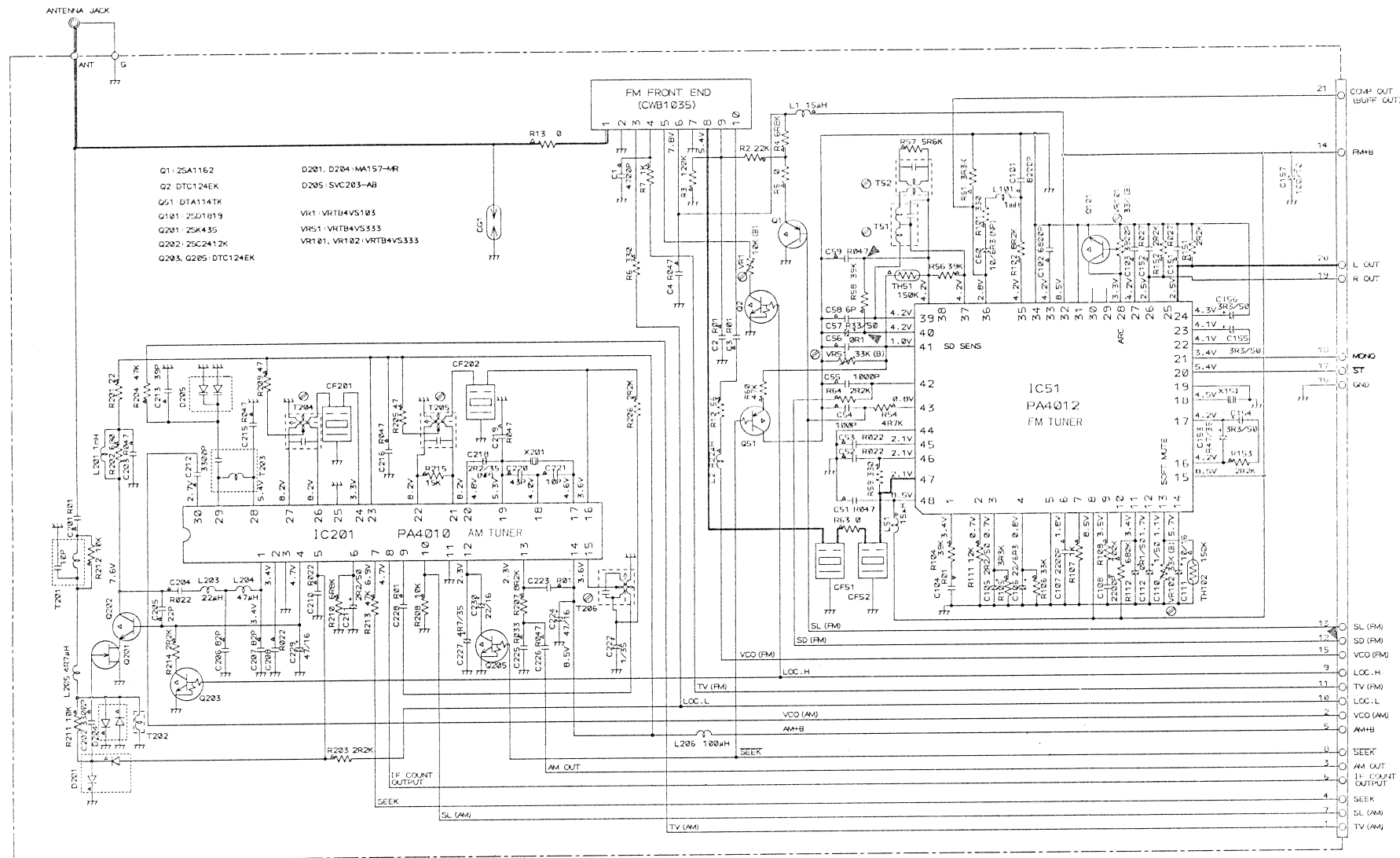


Fig. 13

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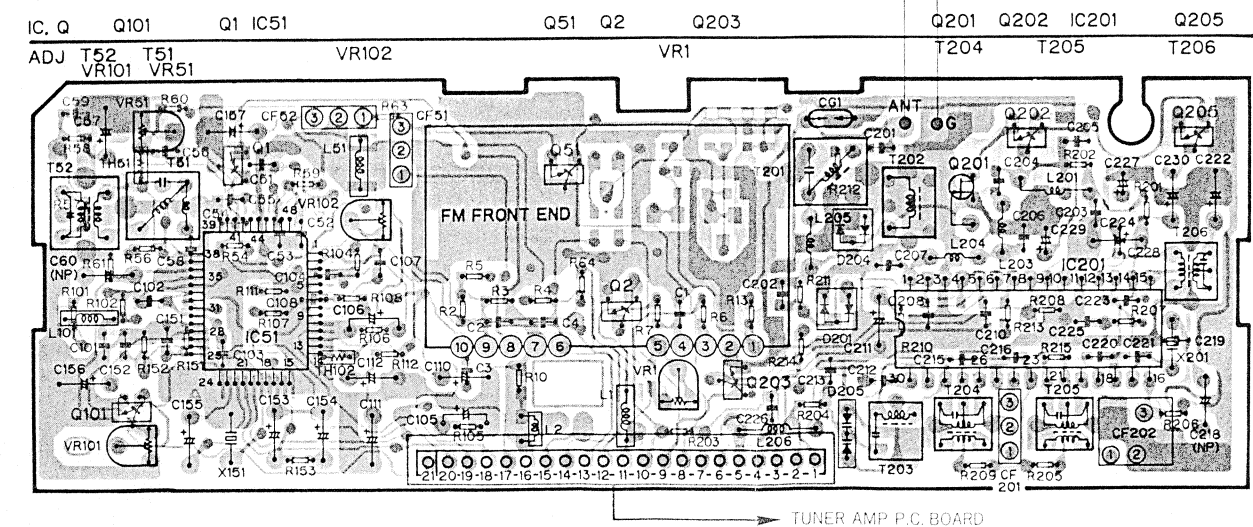


Fig. 14

14. EXPLODED VIEW

NOTE:

- Parts whose parts numbers are omitted are subject to being not supplied.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

• Parts List (EW Model)

Mark No.	Description	Part No.	Mark No.	Description	Part No.
	1 Case		28	Button (KEH-6000RDS) (BAND, P. S/BSM)	CAC2224
⊙	2 Quick Release Handle Assy	CXA3186		Button (KEH-4000RDS) (BAND, BSM)	CAC2430
	3 Panel		29	Knob (FADER)	CAA1209
	4 Cover				
	5 Button	CAC2165	30	Knob (VOLUME)	CAA1208
	6 Screw	CMZ50P080FMC	31	Knob (BASS/TREBLE)	CAA1210
	7 Handle Unit	CXA3490	32	Cushion	
	8 Handle	CNC3197	33	Button	CAC2217
	9 Handle Unit	CXA3471	34	Spring	CBH1187
10	Screw	BPZ20P080FMC	35	Knob (DIRECTION)	CAC2163
11	Bush (KEH-6000RDS)	CNV-724	36	Screw	BMZ26P050FMC
12	Bush	CNV-724	37	Cassette Mechanism Assy	EXK1071
13	Lamp (KEH-6000RDS)	CEL-147	38	Knob (< <)	CAC2159
14	Lamp	CEL1013			
			39	Knob (> >)	CAC2161
15	Bush	CNW-855	40	Volume (KEH-6000RDS)	CCS1111
16	Bush (KEH-6000RDS)	CNW-855		Volume (KEH-4000RDS)	CCS1113
17	Plug (KEH-6000RDS)		41	Volume	CCS1152
	Plug (KEH-4000RDS)		42	Holder	
18	Cushion				
			43	Screw	BMZ30P120FMC
19	Lens	CNV2289			
⊙	20 Key Board Unit (KEH-6000RDS)	CWS1161	45	IC	TA8215L
⊙	Key Board Unit (KEH-4000RDS)	CWS1162	46	Holder	
			47	Switch	CSG-207
21	Button (TUNE)	CAC2210	48	Button (LOUDNESS)	CAC2209
22	Spring	CBH1091	49	Connector (11P) (KEH-6000RDS)	
23	Door	CAT1315		Connector (10P) (KEH-4000RDS)	
24	Grille Unit (KEH-6000RDS)	CXA3098			
	Grille Unit (KEH-4000RDS)	CXA3322	50	Insulator	
25	Button (1, 4)	CAC2221	51	Screw	BMZ30P060FMC
26	Button (2, 5)	CAC2222	52	Chassis Unit (KEH-6000RDS)	
27	Button (3, 6)	CAC2223		Chassis Unit (KEH-4000RDS)	
			53	Clamper	

Mark No.	Description	Part No.	Mark No.	Description	Part No.
54	Cord Assy (KEH-6000RS)	CDE2618	68	Insulator	
	Cord Assy (KEH-4000RS)	CDE2745	69	FM Front End	CWB1035
55	Connector		70	Plug	
56	Connector		71	Holder	
			72	Lever Unit	
57	IC	TA8214K	73	Spring	CBH1191
58	Transistor	2SC3421	74	Plug (KEH-6000RDS)	
59	Holder			Plug (KEH-4000RDS)	
60	Battery	CEX1008	75	Lamp (KEH-6000RDS)	CEL1116
			76	Lamp	CEL1137
61	Screw	BMZ30P040FMC	77	Housing	CNV2290
62	Clamper		78	Lens	CNV2291
63	Box	CNB1289	79	Plate	
64	Screw	CBA1073	80	LCD	CAW1098
			81	Holder	
65	Cord Assy (KEH-6000RDS)	CDE2241	82	Tuner Amp Unit (KEH-6000RDS)	CWM2181
	Cord Assy (KEH-4000RDS)	CDE2744		Tuner Amp Unit (KEH-4000RDS)	CWM2179
66	FM/AM Tuner Unit	CWE1171	83	Spacer	
67	Antenna Jack	CKX1010	84	Spring	CBH1352

NSP:No Spear Part

Mark No. Description	KEH-6000RDS		KEH-4000RDS	
	EW	X1B	EW	X1B
Mark No. Description	Part No.	Part No.	Part No.	Part No.
1 Case	NSP	.....	NSP	.....
Case	.....	NSP	.....	NSP
2 Quick Release Handle Assy	CXA3186	CXA3315	CXA3186	CXA3315
20 Key Board Unit	CWS1161	CWS1169	CWS1162	CWS1170
44 Heat Sink	NSP	.....	NSP	.....
Heat Sink	.....	NSP	.....	NSP
50 Insulator	NSP	.....	NSP	.....
Insulator	.....	NSP	.....	NSP
54 Cord Assy	CDE2618	CDE2840	CDE2745	CDE2839
63 Box	CNB1289	CNB1331	CNB1289	CNB1331
65 Cord Assy	CDE2241	CDE2842	CDE2744	CDE2838
66 FM/AM Tuner Unit	CWE1171	CWE1189	CWE1171	CWE1189
82 Tuner Amp Unit	CWM2181	CWM2186	CWM2179	CWM2188
Cap (AUX IN) Added	NSP	CNV1455
Cover (CD ACC) Added	NSP	CKX-003

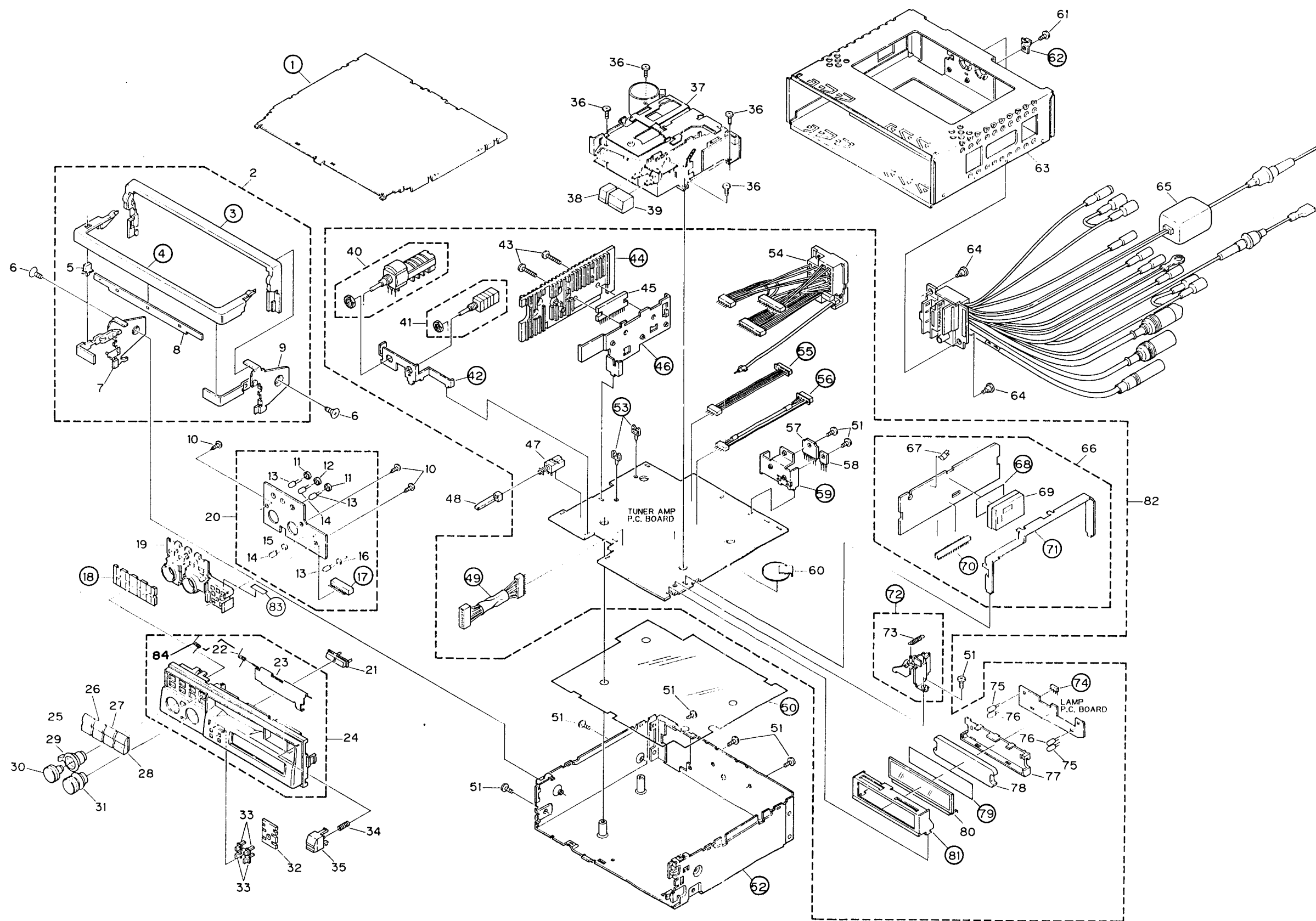
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5



A

B

C

D

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Fig. 15

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15. CASSETTE MECHANISM ASSY EXPLODED VIEW

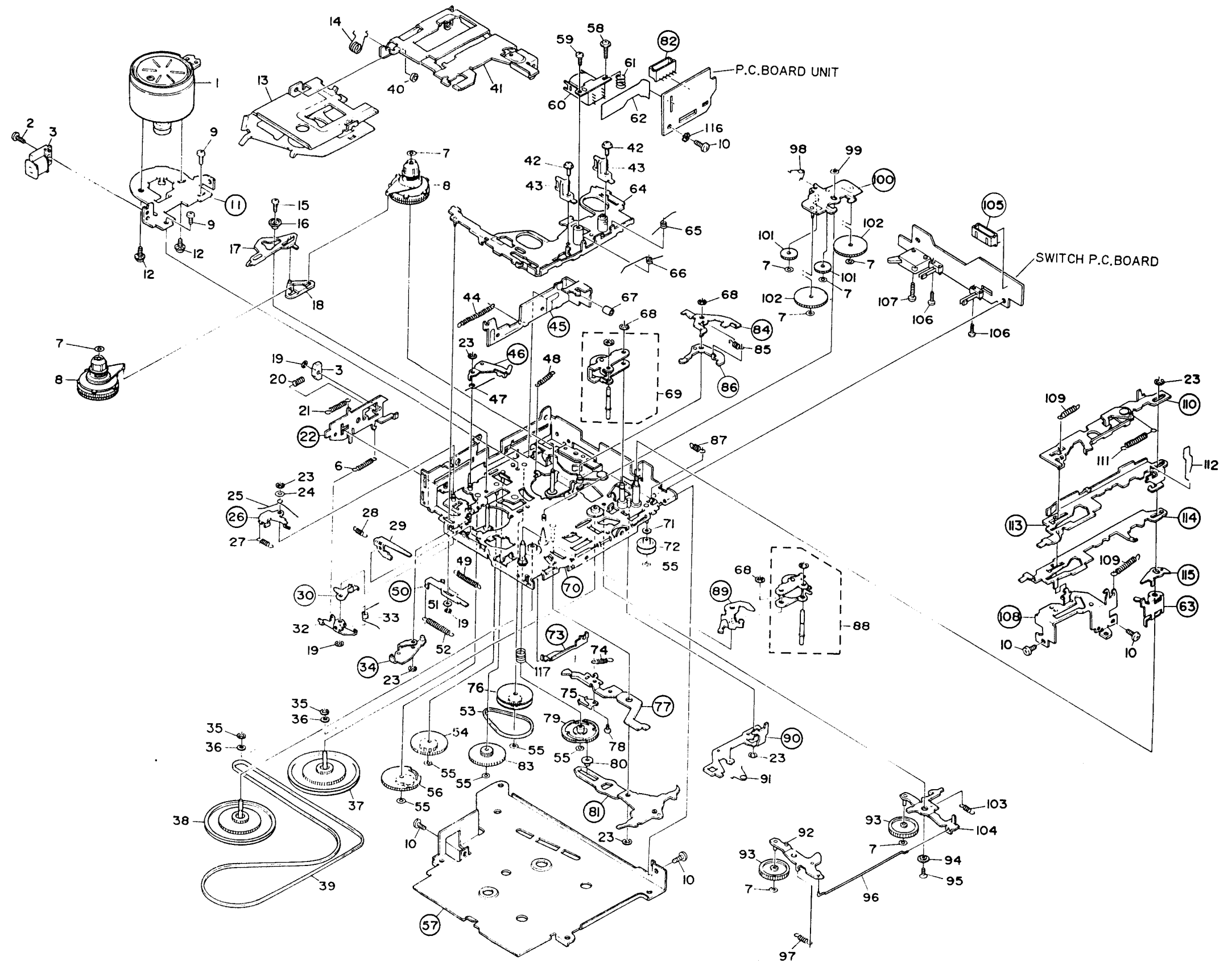
• Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Motor Unit	EXA1033	46	Arm	
2	Screw	EBA1008	47	Spring	EBH1040
3	Solenoid	EXP1001	48	Spring	EBH1041
4	.....		49	Spring	EBH1021
5	.....		50	Lever	
6	Spring	EBH1056	51	Washer	EBE1001
7	Washer	CBF-166	52	Spring	EBH1009
8	Reel Unit	EXA1032	53	Belt	ENT1009
9	Screw	BMZ23P030FMC	54	Gear	ENV1034
10	Screw	BSZ23P040FMC	55	Washer	CBF-135
11	Bracket		56	Gear	ENV1050
12	Screw	PMS26P025FUC	57	Cover	
13	Cassette Holder	ENC1061	58	Screw	EBA1013
14	Spring	EBH1019	59	Screw	BMZ20P050FMC
15	Screw	EBA1009	60	Head	EP61005
16	Collar	ELA1042	61	Spring	EBH1065
17	Arm	ENV1032	62	P. C. Board	ENP1012
18	Arm	ENV1045	63	Arm	
19	Washer	YE12FUC	64	Head Base Unit	EXA1036
20	Spring	EBH1038	65	Spring	EBH1004
21	Spring	EBH1012	66	Spring	EBH1003
22	Lever Unit		67	Cushion	CNV1667
23	Washer	YE15FUC	68	Washer	YE20FUC
24	Washer	CBF-165	69	Pinch Roller Unit	EXA1034
25	Spring	EBH1049	70	Chassis Unit	
26	Arm		71	Washer	EBF1004
27	Spring	EBH1060	72	Pulley	ENV1009
28	Spring	EBH1066	73	Lever	
29	Arm	ENC1046	74	Spring	EBH1025
30	Arm		75	Spring	EBL1001
31	.....		76	Pulley	ENV1010
32	Arm	ENC1057	77	Arm	
33	Spring	EBH1008	78	Screw	HBA-147
34	Arm Unit		79	Gear	ENV1035
35	Washer	CBG1001	80	Collar	ELA1018
36	Washer	HBF-179	81	Arm	
37	Flywheel (N)	ENV1029	82	Plug (5P)	
38	Flywheel (R)	ENV1030	83	Gear	ENV1011
39	Belt	ENT1003	84	Arm	
40	Roller	ELA1051	85	Spring	EBH1024
41	Frame Unit	EXA1025	86	Ratchet	
42	Screw	PMS20P040FMC	87	Spring	EBH1018
43	Tape Guide	ENV1016	88	Pinch Roller Unit	EXA1035
44	Spring	EBH1020	89	Arm	
45	Lever		90	Lever	

• Cassette Mechanism Assy

Mark No.	Description	Part No.
91	Spring	EBH1013
92	*	
93	Gear	ENV1043
94	Collar	ELA1032
95	Screw	HBA-212
96	Spring	EBH1007
97	Spring	EBH1006
98	Spring	EBH1058
99	Washer	EBF1005
100	Arm Unit	
101	Gear	ENV1018
102	Gear	ENV1017
103	Spring	EBH1022
104	Arm Unit	EXA1005
105	Plug (6P)	
106	Screw	EBA1017
107	Screw	BMZ20P070FMC
108	Bracket	
109	Spring	EBH1016
110	Lever Unit	
111	Spring	EBH1048
112	Spring	EBH1005
113	Lever	
114	Lever	
115	Arm	
116	Washer	WH23FMC
117	Spring	EBH1067

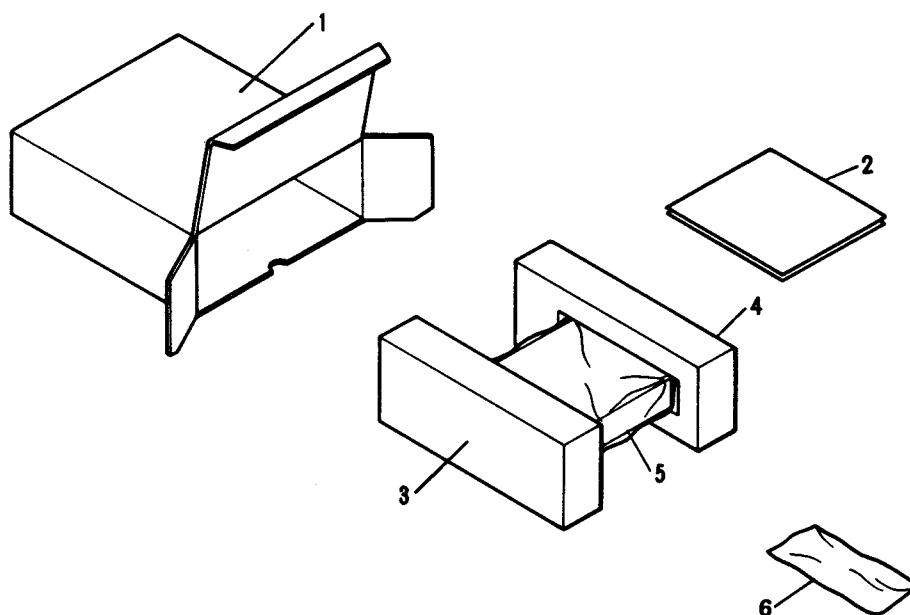
*) Number 92 is part of the chassis unit and cannot be removed.



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Fig. 16

16. PACKING METHOD



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Fig. 17

• Parts List

NSP: No Spare Part

	KEH-6000RDS		KEH-4000RDS	
	EW	X1B	EW	X1B
Mark No. Description	Part No.	Part No.	Part No.	Part No.
1 Carton	CHG1726	CHG1767	CHG1727	CHG1768
*2-1 Owner's Manual	CRD1345	CRD1353	CRD1345	CRD1353
**2-2 Owner's Manual	CRB1158	.....	CRB1158	.....
2-3 Installation Manual	CRD1369	.....	CRD1370	.....
2-4 Card	NSP	.....	NSP	.....
Card	.....	NSP	.....	NSP
2-5 Caution Card	NSP	.....	NSP	.....
Caution Card	.....	NSP	.....	NSP
2-6 Caution Card	NSP	.....	NSP	.....
2-7 Passport	NSP	.....	NSP	.....
3 Styrofoam	CHP1257	CHP1263	CHP1257	CHP1263
4 Styrofoam	CHP1258	CHP1264	CHP1258	CHP1264
5 Cover	CEG-236	CEG-173	CEG-236	CEG-173
6 Accessory Assy	CEA1471	CEA1488	CEA1471	CEA1488
6-1 Screw(×1)	CBA-102	CBA-102	CBA-102	CBA-102
6-2 Screw(×1)	CBA1002	CBA1002	CBA1002	CBA1002
6-3 Strap	CNF-111	.....	CNF-111	.....
Bracket	.....	NSP	.....	NSP
6-4 Nut(×2)	NF50FMC	NF50FMC	NF50FMC	NF50FMC
6-5 Bush	CNV1009	CNV1009	CNV1009	CNV1009

*2-1 Owner's Manual

Part No.	Model	Language
CRD1345	KEH-6000RDS/EW, KEH-4000RDS/EW	English, French, German, Spanish, Swedish, Norwegian, Dutch, Finnish
CRD1353	KEH-6000RDS/X1B, KEH-4000RDS/X1B	English, French, Italian

**2-2 Owner's Manual

Part No.	Model	Language
CRB1158	KEH-6000RDS/EW, KEH-4000RDS/EW	Italian

17. ELECTRICAL PARTS LIST

NOTE:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/8S□□□J, RS1/10S□□□J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

Unit Number :

Unit Name : FM/AM Tuner Unit

MISCELLANEOUS

RESISTORS

Mark	====	Circuit Symbol & No.	====	Part Name	Part No.	Mark	====	Circuit Symbol & No.	====	Part Name	Part No.
IC	51				PA4012	R	2				RS1/10S223J
IC	201				PA4010	R	3				RS1/10S124J
Q	1			Chip Transistor	2SA1162	R	4				RS1/10S682J
Q	2			Chip Transistor	DTC124EK	R	5	13	63		RS1/10S0R0J
Q	51			Chip Transistor	DTA114TX	R	6	59	101		RS1/10S331J
Q	101			Chip Transistor	2SD1819	R	7				RS1/10S102J
Q	201				2SK435	R	10				RS1/10S560J
Q	202			Chip Transistor	2SC2412K	R	54				RS1/10S472J
Q	203	205		Chip Transistor	DTC124EK	R	56	58	104		RS1/10S393J
D	201	204		Chip Diode	MA157-MR	R	57				RS1/10S562J
D	205			Variable Capacitance Diode	SVC203-AB	R	60				RS1/10S473J
L	1	51		Inductor	CTF1104	R	61	105			RS1/10S332J
L	2			Inductor	CTF1086	R	64				RS1/10S222J
L	101			Inductor	CTF1126	R	102				RS1/10S822J
L	201			Inductor	CTF1084	R	106				RS1/10S333J
L	203			Ferri-Inductor	LAU220K	R	107				RS1/10S102J
L	204			Ferri-Inductor	LAU470K	R	108				RS1/10S104J
L	205			Ferri-Inductor	LAU4R7K	R	111				RS1/10S123J
L	206			Ferri-Inductor	CTF-157	R	112				RS1/10S684J
T	51			Coil	CTE1021	R	151	152	153		RS1/10S222J
T	52			Coil	CTE1022	R	201				RS1/10S220J
T	201			Coil	CTB1020	R	202				RS1/10S681J
T	202			Coil	CTB1004	R	203	206	214		RS1/10S222J
T	203			Coil	CTB1040	R	204	213			RS1/10S473J
T	204			Coil	CTE1025	R	205	209			RS1/10S470J
T	205			Coil	CTE1026	R	207				RS1/10S822J
T	206			Coil	CTE1027	R	208	211	212		RS1/10S103J
CG	1				DSP-201M	R	210				RS1/10S682J
TH	51	102		Thermister	DTN-T204D154K	R	215				RS1/10S153J
CF	51	52		Filter	CTF1057						
CF	201			Ceramic Filter	CTF1041						
CF	202			Filter	CTF1085						
X	151			Ceramic Resonator	CSS1055						
X	201			Crystal Resonator	CSS1057						
VR	1			Semi-fixed 10kΩ (B)	VRTB4VS103						
VR	51	101	102	Semi-fixed 33kΩ (B)	VRTB4VS333						
				FM Front End	CWB1035						

CAPACITORS

Mark	====	Circuit Symbol & No.	====	Part Name	Part No.
C	1				CKSQYB472K50
C	2	3	104		CKSQYB103K50
C	4	51	59		CKSQYF473Z25
C	52	53			CKSQYB223K25
C	54				CCSQSL101J50
C	55				CKSQYB102K50
C	56				CKSQYF104Z25
C	57				CEAR33M50LS2
C	58				CCSQCH060D50
C	60				CEALNP100M6R3

Mark	-----	Circuit Symbol & No.	-----	Part Name	Part No.	Mark	-----	Circuit Symbol & No.	-----	Part Name	Part No.
C	101			CKSQY8822K50		Q	401 402	Chip Transistor		2SC3326	
C	102			CKSQY8682K50		Q	404 503 505 602 605 606 608 702			2SC2458	
C	103			CKSQY8392K50		Q	501	Chip Transistor		DTC114EK	
C	105			CEA2R2M50LL		Q	502 504			2SK330	
C	106			CEA220M6R3LL		Q	506	Chip Transistor		2SC3098	
C	107 108			CKSQY8222K50		Q	601 623			2SB1243	
C	110			CEA010M50LL		Q	603			2SD1864	
C	111			CEA100M16LL		Q	604 614 615 617 618			2SB1238	
C	112			CEA0R1M50LL		Q	607 621 853 854			2SA1048	
C	151 152			CKSQYB273K25		Q	609			DTA124ES	
C	153			CSZAR47M35L		Q	610			2SC1740S	
C	154 155 156			CEA3R3M50LL		Q	613			2SC3421	
C	157			CEA101M10LS		Q	616	Chip Transistor		DTC143EK	
C	201 223 228			CKSQYB103K25		Q	620 761			2SC3113	
C	202 212			CKSQYB332K50		Q	622 965 966			DTC144ES	
C	203 215 216 219 226			CKSQYF473Z25		Q	624			DTA144EK	
C	204 208 210			CKSQYB223K25		Q	762 807	Chip Transistor		DTC144EK	
C	205			CCSQCH220J50		Q	763 805 806 851 852	Chip Transistor		2SC2712	
C	206 207			CCSQCH820J50		Q	855 856	Chip Transistor		2SA1162	
C	211			CEA2R2M50LL		Q	951 952			2SC2458	
C	213			CCSQCH390J50		Q	953 957	Chip Transistor		DTA124EK	
C	218			CEA2R2M35NPLL		Q	954 955 958 959 960 961			DTC143TS	
C	220			CCSQCH430J50		Q	967	Chip Transistor		2SD1757K	
C	221			CCSQCH100D50		D	251 351 352 361 362	701 702 703 704 Chip Diode		MA110-1A	
C	222			CSZA010K35L		D	363	Chip Diode		MA151WA-MN	
C	224			CEA470M16LL		D	401 604	Chip Diode		MA8075M	
C	225			CKSQYB333K25		D	501 502	Chip Diode		MA8027H	
C	227			CEA4R7M35LS		D	601			ERC04-02E	
C	229			CEA470M16LS		D	602 609 951			ERA15-02VH	
C	230			CEA220M16LL		D	603 605	Chip Diode		MA8056H	
						D	606 607			ERA15-10VH	
						D	608	Chip Diode		MA728-2A	
						D	709 851 953 954	Chip Diode		MA110-1A	
						D	761	Chip Diode		MA151WK-MT	
						D	852	Chip Diode		MA8039L	
						D	952	Chip Diode		MA8082M	
						L	502 703	Ferri-Inductor		LAU2R2M	
						L	701 702 801	Ferri-Inductor		LAU101K	
						X	701	Crystal Resonator		CSS1011	
						X	801	Crystal Resonator		CSS1056	
						X	802	Ceramic Resonator		CSS-042	
						S	451	Switch(LOUD)		CSG-207	
						IL	906 907	Lamp 8V 60mA		CEL1137	
						IL	908 909	Lamp 8V 60mA		CEL1116	
						VR	301 302	Semi-fixed 33kΩ (B)		VRT16VS 333	
						VR	451	Volume 50kΩ (B) × 2		CCS1152	
						VR	452/S 601	Volume/Switch		CCS1111	
								50kΩ (W), 20kΩ (N), 20kΩ (B), 200Ω			
						VR	761	Semi-fixed 150kΩ (B)		VRT16VS 154	
						VR	801	Semi-fixed 33kΩ (B)		CCP1049	
						VR	802	Semi-fixed 100kΩ (B)		CCP1052	
						B	701	Battery		CEX1008	
								LCD		CAW1098	
								FM/AM Tuner Unit			

Tuner Amp Unit

Consists of

- Tuner Amp P.C. Board
- Lamp P.C. Board
- FM/AM Tuner Unit

Unit Number :

Unit Name : Tuner Amp Unit (KEH-6000RDS)

MISCELLANEOUS

Mark	-----	Circuit Symbol & No.	-----	Part Name	Part No.	Mark	-----	Circuit Symbol & No.	-----	Part Name	Part No.
IC	251			TA8162SN		VR	451	Volume 50kΩ (B) × 2		CCS1152	
IC	281			AN6263N		VR	452/S 601	Volume/Switch		CCS1111	
IC	301			HA12134FP				50kΩ (W), 20kΩ (N), 20kΩ (B), 200Ω			
IC	351 451			NJM4558M		VR	761	Semi-fixed 150kΩ (B)		VRT16VS 154	
IC	501			M74HC4066FP		VR	801	Semi-fixed 33kΩ (B)		CCP1049	
IC	551			TA8215L		VR	802	Semi-fixed 100kΩ (B)		CCP1052	
IC	601			TA8214K							
IC	701			PD4214		B	701	Battery		CEX1008	
IC	702			LC3517BSL-15				LCD		CAW1098	
IC	703			HD61602RJ				FM/AM Tuner Unit			
IC	801			PM4002							
IC	802			LC7071NM							
IC	803			BA1604F							
Q	281 301 302 619 956 968 969	Chip Transistor		DTC124EK							
Q	361 362 363 403 701 703 704	Chip Transistor		2SC2712							

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RESISTORS

Mark	-----	Circuit Symbol & No.	-----	Part Name	Part No.
R	251 252 623 624			RS1/10S104J	
R	253 254			RS1/10S181J	
R	255 256 304 357 766 877 878			RS1/10S183J	
R	257 258 463 738			RS1/10S133J	
R	259 260			RS1/10S334J	
R	262 502 769 805			RS1/10S104J	
R	263 264 368 369 471 514 767 770 814			RS1/10S222J	
R	281 282 474 475			RS1/10S822J	
R	283			RS1/10S684J	
R	284 520 780			RS1/10S101J	
R	303 403 404 881 882 953 954 955			RS1/10S223J	
R	305 306 351 352 464 513 603 604 609			RS1/10S103J	
R	307 308 453 454 611 808			RS1/10S332J	
R	309 518			RS1/10S101J	
R	310 353 354 405 406 610 613 722			RS1/10S473J	
R	355 356 855 856			RS1/10S124J	
R	364 365 472 503 504 761 951 952			RS1/10S222J	
R	367 455 456			RS1/10S153J	
R	401 507 515 714 715 716 717 718 723			RS1/10S102J	
R	402 615 740 741 742 744 747 748 752 753			RS1/10S473J	
R	407			RS1/8S222J	
R	451 452			RS1/10S153J	
R	457 458 620 621 625			RS1/10S332J	
R	459 460 461 462 465 466 505 510 511 711			RS1/10S102J	
R	473			RS1/10S133J	
R	506 854			RS1/10S152J	
R	508 521 605 608 614 619 622 806 888			RS1/10S472J	
R	509 771 819 851 874 883 884			RS1/10S102J	
R	516			RS1/10S331J	
R	517			RS1/10S182J	
R	519			RS1/10S821J	
R	522			RD1/4PM475J	
R	551 552			RS1/10S331J	
R	553 554 555 556 557 558 559 560			RS1/8S100J	
R	561 562			RS1/10S474J	
R	601 606 607 612 735 736 737 746 762 803			RS1/10S223J	
R	616 763			RS1/10S221J	
R	617 618			RS1/10S272J	
R	626 628 764 807 887			RS1/10S103J	
R	627 629 630 631			RS1/8S681J	
R	712 713 724 725 726 727 728 729 730			RS1/10S102J	
R	731 732 733 745 772 773 775 777 810			RS1/10S102J	
R	739			RS1/10S334J	
R	749			RS1/10S563J	
R	754 755 756 757 758 759 760 765 779			RS1/10S473J	
R	776 957 960			RS1/10S392J	
R	778			RS1/10S222J	
R	781 853			RS1/10S152J	
R	782			RS1/10S0R0J	
R	804			RS1/10S184J	
R	809			RS1/10S681J	
R	815 958			RS1/10S223J	
R	817 959			RS1/10S472J	
R	821 852 873			RS1/10S102J	
R	857 858 875 876			RS1/10S473J	

Mark	-----	Circuit Symbol & No.	-----	Part Name	Part No.
R	859 860			RS1/10S471J	
R	879 880			RS1/10S821J	
R	886			RS1/10S561J	
CAPACITORS					
Mark	-----	Circuit Symbol & No.	-----	Part Name	Part No.
C	251 252			CKSQYB681K50	
C	253 254 309 820			CEA470M16LS	
C	255 256 281			CKSQYB103K50	
C	259 283			CEA101M10LS	
C	260 312 403 459 819 857 858 859			CEA100M16LS2	
C	261			CEA4R7M35L2	
C	282			CCSLSL330J50	
C	284			CEA0R1M50LS2	
C	303 304 310 954			CEA010M50LS2	
C	305 306			CEAR22M50LS2	
C	307 308			CEALNP100M16	
C	311 602 611 951			CEA220M16LS	
C	351 352			CEALNP2R2M35	
C	353 354			CCSQCH150J50	
C	401 402 457 458 551 552 851 852			CEA4R7M35LS	
C	451 452 813 814			CCSQCH270J50	
C	453 454 803 804			CKSQYB332K50	
C	455 456 810			CKSQYB333K25	
C	461 462			CKSQYB272K50	
C	463 464			CEAR33M50LS2	
C	507 509 511 618 761 762 763 767 808			CKSQYB103K50	
C	508	4.7 μ F/16V		CH1005	
C	510			CEA474J63	
C	512 513			CCSLSL101J50	
C	514 553 554			CCSLSL681J50	
C	515			CEAR47M50LS2	
C	516 766 806			CKSQYB473K25	
C	517 603 608 613 615 765			CKSQYF473250	
C	555 556 605 606			CEA470M16L2	
C	557 558 559 560			CEA224J63	
C	561			CEA101M10L2	
C	601			CEA471M16L2	
C	607			CEA331M10L2	
C	609			CEA100M16L2	
C	610 719 855 856 952			CKSQYB102K50	
C	614			CEA220M16L2	
C	616			CKSYB472K50	
C	617			CEA221M16L2	
C	619			CEA472M16L2	
C	705 706 825			CCSQCH100D50	
C	707 708 709 710 711			CKSYF334225	
C	713 715			CEANL220M16LL	
C	714 716			CKSQYF473250	
C	717			CEA150M10LS	
C	718			CEA010M50L2	
C	764			CEAR22M50LS2	
C	768 809			CKSQYB223K50	
C	769 823 860			CKSQYB102K50	
C	801 802			CKSQYB472K50	
C	805			CEA2R2M16L	

Mark	====	Circuit Symbol & No.	====	Part Name	Part No.	Mark	====	Circuit Symbol & No.	====	Part Name	Part No.
C 807				CKSQYB223K50		D 604		Chip Diode		MA8075M	
C 811				CKSYB104K25		D 606 607				ERA15-10VH	
C 812				CKSYB683K25		D 608		Chip Diode		MA728-2A	
C 817 818				CCSQCH330J50		D 705 708 709 953 954		Chip Diode		MA110-1A	
C 821				CSZSR15M35		D 761		Chip Diode		MA151WK-MT	
C 824				CKSQYB332K50		D 952		Chip Diode		MA8082M	
C 853 854				CEALNP4R7M16		L 502 703		Ferri-Inductor		LAU2R2M	
C 861				CEA221M10L2		L 701 702 801		Ferri-Inductor		LAU101K	
C 953				CEA2R2M50L2		X 701		Crystal Resonator		CSS1011	
						X 801		Crystal Resonator		CSS1056	
Unit Number :						X 802		Ceramic Resonator		CSS-042	
Unit Name : Tuner Amp Unit (KEH-4000RDS)						S 451		Switch (LOUD)		CSG-207	
MISCELLANEOUS						IL 906 907		Lamp 8V 60mA		CEL1137	
Mark	====	Circuit Symbol & No.	====	Part Name	Part No.	VR 301 302		Semi-fixed 33kΩ (B)		VRT86VS333	
						VR 451		Volume 50kΩ (B) × 2		CCS1152	
IC 251				TA8162SN		VR 452/S 601		Volume/Switch		CCS1113	
IC 281				AN6263M				50kΩ (W), 20kΩ (B), 200Ω			
IC 301				HA12134FP		VR 761		Semi-fixed 150kΩ (B)		VRT86VS154	
IC 351 451				NJM4558M		VR 801		Semi-fixed 33kΩ (B)		CCP1049	
IC 501				M74HC4066FP		VR 802		Semi-fixed 100kΩ (B)		CCP1052	
IC 551				TA8215L		B 701		Battery		CEX1008	
IC 601				TA8214K				LCD		CAW1098	
IC 701				PD4214				FM/AM Tuner Unit			
IC 702				LC3517BSL-15							
IC 703				HD61602RJ							
IC 801				PM4002							
IC 802				LC7071NM							
IC 803				BA1604F							
Q 281 301 302 956 968 969				DTC124EK		R 251 252				RS1/10S104J	
Q 361 362 363 701 703 704				2SC2712		R 253 254				RS1/10S181J	
						R 255 256 304 357 766				RS1/10S183J	
Q 501				DTC114EK		R 257 258 463 738				RS1/10S133J	
Q 502 504				2SK330		R 259 260				RS1/10S334J	
Q 503 505 602 605 606 702				2SC2458							
Q 506				2SC3098		R 262 502 769 805				RS1/10S104J	
Q 601 623				2SB1243		R 263 264 368 369 471 514 767 770 814				RS1/10S222J	
Q 603				2SD1864		R 281 282				RS1/10S822J	
Q 604				2SB1238		R 283				RS1/10S684J	
Q 607				2SA1048		R 284 520 780				RS1/10S101J	
Q 610				2SC1740S							
Q 613				2SC3421		R 303 953 954 955				RS1/10S223J	
Q 622				DTC144ES		R 305 306 351 352 464 513 603 604 609				RS1/10S103J	
Q 624				DTA144EK		R 307 308 453 454 611 808				RS1/10S332J	
Q 761				2SC3113		R 309 518				RS1/10S101J	
Q 762 807				DTC144EK		R 310 353 354 610 722				RS1/10S473J	
Q 763 805 806				2SC2712							
Q 951 952				2SC2458		R 355 356				RS1/10S124J	
Q 957				DTA124EK		R 364 365 472 503 504 761 951 952				RS1/10S222J	
Q 958 959 960 961				DTC143TS		R 367 455 456				RS1/10S153J	
Q 967				2SD1757K		R 451 452				RS1/10S153J	
D 251 351 352 361 362 701 702 703 704				MA110-1A		R 457 458				RS1/10S332J	
D 363				MA151WA-MN							
D 501 502				MA8027H		R 459 460 461 462 465 466 505 510 511 711				RS1/11S102J	
D 601				ERC04-02E		R 473				RS1/11S133J	
D 602 951				ERA15-02VH		R 474 475				RS1/11S472J	
D 603 605				MA8056H		R 506				RS1/11S152J	
						R 507 515 714 715 716 717 718 723				RS1/11S102J	
						R 508 521 605 608 614 806 888				RS1/11S472J	
						R 509 771 819				RS1/11S102J	
						R 516				RS1/11S331J	
						R 517				RS1/11S182J	
						R 519				RS1/11S221J	

Mark	====	Circuit Symbol & No.	====	Part Name	Part No.	Mark	====	Circuit Symbol & No.	====	Part Name	Part No.
R	522				RD1/4PM475J	C	557 558 559 560			CQEA224J63	
R	551 552				RS1/10S331J	C	561			CEA101M10L2	
R	553 554 555 556 557 558 559 560				RS1/8S100J	C	601			CEA471M16L2	
R	561 562				RS1/10S474J	C	607			CEA331M10L2	
R	601 606 607 612 735 736 737 746 762 803				RS1/10S223J	C	609			CEA100M16L2	
R	615 740 741 742 744 747 752 753				RS1/10S473J	C	614			CEA220M16L2	
R	616 763				RS1/10S221J	C	616			CKSYB472K50	
R	627 629 630 631				RS1/8S681J	C	617			CEA221M16L2	
R	628 764 807				RS1/10S103J	C	619			CEA472M16L2	
R	632 633				RS1/8S0R0J	C	705 706 825			CCSQCH100D50	
R	712 713 724 725 726 727 728 729 730				RS1/10S102J	C	707 708 709 710 711			CKSYF334Z25	
R	731 732 733 745 772 773 775 777 810				RS1/10S102J	C	713 715			CEANL220M16LL	
R	739				RS1/10S334J	C	714 716			CKSQYF473Z50	
R	749				RS1/10S563J	C	717			CEAR15M10LS	
R	754 755 756 757 758 759 760 765 779				RS1/10S473J	C	718			CEA010M50L2	
R	776 957 960				RS1/10S392J	C	719 952			CKSQYB102K50	
R	778				RS1/10S222J	C	764			CEAR22M50LS2	
R	781				RS1/10S152J	C	768 809			CKSQYB223K50	
R	804				RS1/10S184J	C	769 823			CKSQYB102K50	
R	809				RS1/10S681J	C	801 802			CKSQYB472K50	
R	815 958				RS1/10S223J	C	805			CSZA2R2M16L	
R	817 959				RS1/10S472J	C	807			CKSQYB223K50	
R	821				RS1/10S102J	C	811			CKSYB104K25	
						C	812			CKSYB683K25	
						C	817 818			CCSQCH330J50	
CAPACITORS											
Mark	====	Circuit Symbol & No.	====	Part Name	Part No.	C	821			CSZSR15M35	
						C	824			CKSQYB332K50	
C	251 252				CKSQYB681K50	C	953			CEA2R2M50L2	
C	253 254 309 820				CEA470M16LS						
C	255 256 281				CKSQYB103K50	Unit	Number :				
C	259 283				CEA101M10LS	Unit	Name :	Key Board Unit (KEH-6000RDS)			
C	260 312 459 819				CEA100M16LS2						
C	261				CEA4R7M35L2	Mark	====	Circuit Symbol & No.	====	Part Name	Part No.
C	282				CCSQSL330J50			IL 901 902 903	Lamp 14V 40mA	CEL-147	
C	284				CEA0R1M50LS2			IL 904 905	Lamp 14V 40mA	CEL1013	
C	303 304 310 954				CEA010M50LS2			S 901 902 903 904 905 906 907 908 909 910	Switch	CSG-253	
								S 911 912 913 914 915	Switch	CSG-253	
C	305 306				CEAR22M50LS2						
C	307 308				CEALNP100M16	Unit	Number :				
C	311 602 611 951				CEA220M16LS	Unit	Name :	Key Board Unit (KEH-4000RDS)			
C	351 352				CEALNP2R2M35						
C	353 354				CCSQCH150J50						
C	451 452 813 814				CCSQCH270J50	Mark	====	Circuit Symbol & No.	====	Part Name	Part No.
C	453 454 803 804				CKSQYB332K50			IL 904 905	Lamp 14V 40mA	CEL1013	
C	455 456 810				CKSQYB333K25			S 901 902 903 904 905 906 907 908 909 910	Switch	CSG-253	
C	457 458 551 552				CEA4R7M35LS			S 911 912 913 914 915	Switch	CSG-253	
C	461 462				CKSQYB272K50						
C	463 464				CEAR33M50LS2	Unit	Number :				
C	507 509 511 618 761 762 763 767 808				CKSQYB103K50	Unit	Name :	Switch P.C. Board			
C	508			4.7 μ F/16V	CCH1005						
C	510				CQEA474J63	Mark	====	Circuit Symbol & No.	====	Part Name	Part No.
C	512 513				CCSQSL101J50			D 1		F1SR35-100A	
								S 1 2	Switch (MUTE, MOTOR)	ESH1001	
C	514 553 554				CCSQSL681J50			S 3	Switch (TAPE/TUNER)	MSK-126	
C	515				CEAR47M50LS2						
C	516 766 806				CKSQYB473K25						
C	517 603 608 613 615 765				CKSQYF473Z50						
C	555 556 605 606				CEA470M16L2						

Unit Number :
Unit Name : P.C. Board Unit

Mark	===== -----	Circuit Symbol & No.	==== -----	Part Name	Part No.
S	1			Switch (FWD/REV)	ESH1002

Miscellaneous Parts List

Mark	===== -----	Circuit Symbol & No.	==== -----	Part Name	Part No.
HD	1			Head	EPB1006
M	1			Motor Unit	EXA1033
SO	1			Solenoid	EXP1001

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Service Manual

**ORDER NO.
CRT 1094**

CASSETTE MECHANISM ASSEMBLY

CX-166

- This service manual is for cassette mechanism assembly used in car stereo components.
- Refer to the service manual for individual models for details on sections other than the cassette mechanism assembly.

	Model	Service Manual	Model	Service Manual
With music search	KE-3050/ES	CRT1088		
	KE-3080/EW			
	KE-3080SDK/WG			
	KE-3050QR/UC	CRT1089		

	Model	Service manual	Model	Service Manual
Without music search	KP-3120/EW, ES	CRT1085	KP-4440/UC, ES	CRT1092
	KP-3130/EW		KP-5011/US	
	KP-3120SDK/WG		KP-5550/UC, ES	
	KPH-4120/EW, ES	CRT1086		
	KPH-4130/EW			
	KPH-4120SDK/WG			
	KE-3020/ES	CRT1087		
	KE-3030/EW			
	KE-3030SDK/WG			
	KE-2222/UC, ES	CRT1090		
	KE-2515/US			
	KE-3011/US			
	KE-3232/UC, ES			

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PIONEER ELECTRONIC (EUROPE) N.V. Keetberglaan 1, 2740 Beveren, Belgium TEL: 03/775-28-08
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Breeside, Victoria 3185, Australia
 TEL: (03) 580-9911

1. DISASSEMBLY

Note: Always use new washer and E-washer at the time of reassembling.

● Dismounting the Cassette Holder (Fig. 1)

- (1) Make the claw straight.
- (2) Remove the spring.
- (3) The cassette holder is gripped at 2 points, shown by arrows. So, shift it toward the left and pull it out from above.

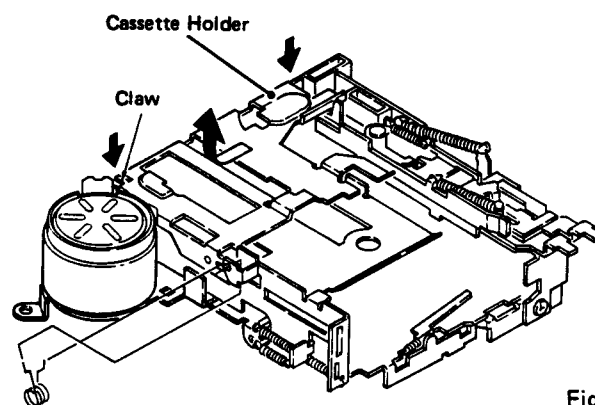


Fig. 1

● Dismounting the Reel Unit (Fig. 2)

- (1) Take off the washer.
- (2) Remove the reel unit.

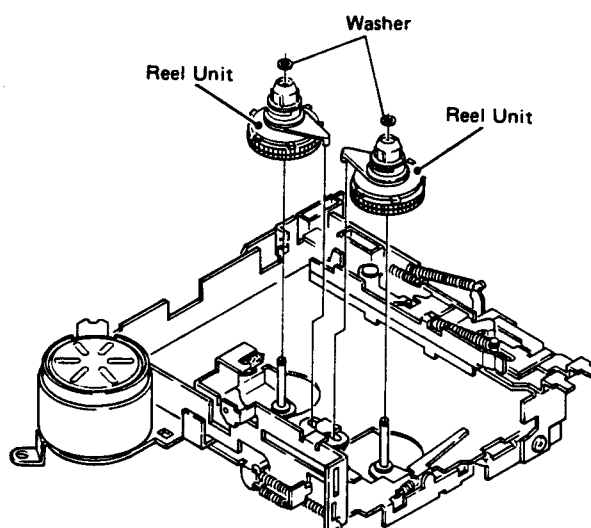


Fig. 2

● Dismounting the Flywheels (Fig. 3)

- (1) Take off the E-washer. Retain washer properly to ensure it doesn't get lost.
- (2) Remove the flywheels. Do not mistake the N and R flywheels (otherwise tape speed would change).

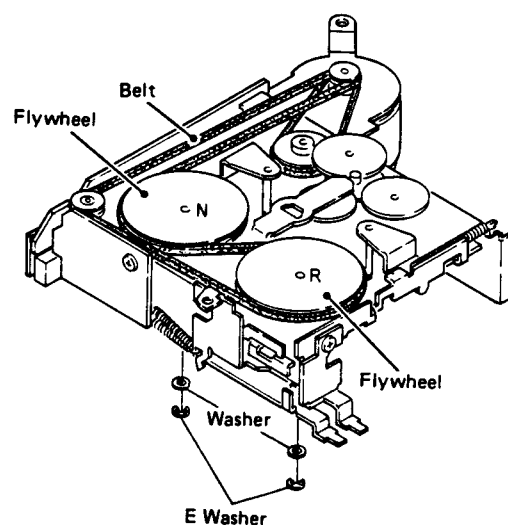


Fig. 3

● Dismounting the Head (Fig. 4, 5)

- (1) Remove the P.C. board unit, after taking off its fastening screw.

Note: Take care not to change the setting of FWD/REV switch of P.C. board.

- (2) Remove the 3 springs.
- (3) Take off E-washer.
- (4) Remove the lever unit (EJ).

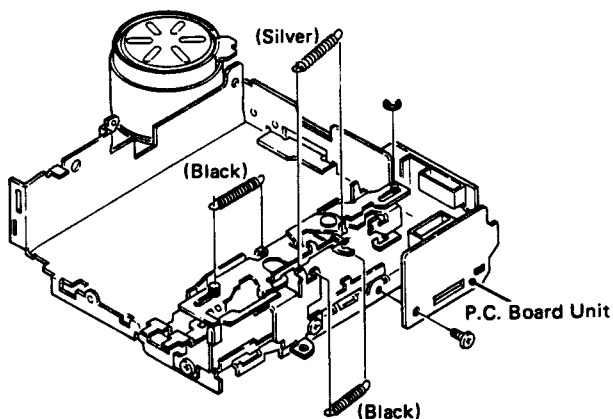


Fig. 4

- (5) Take off the lever (FF). When reassembling, make sure that the spring comes in front of arm unit.
- (6) Take off lever (REW).
- (7) Remove the head after taking off its 2 retaining screws.

Note: The head can be dismantled, even without taking off the levers given in above steps (5) & (6).

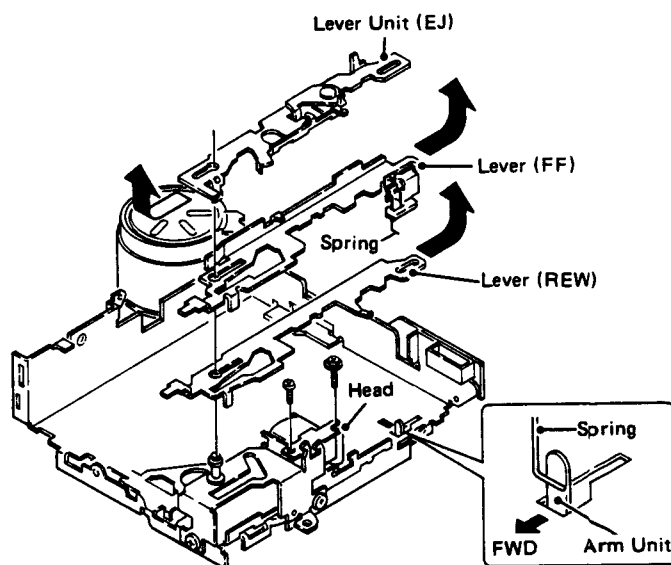


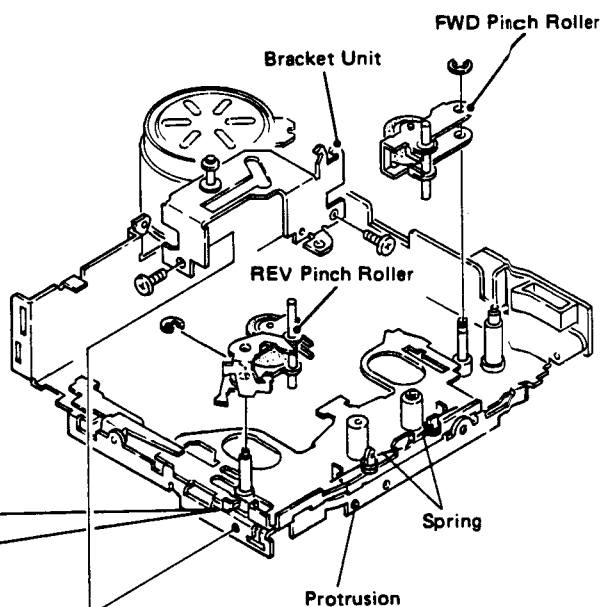
Fig. 5

● Dismounting the FWD Pinch Roller (Fig. 6)

- (1) Remove E-washer & spring, and then take off the FWD pinch roller.

● Dismounting the REV Pinch Roller (Fig. 6)

- (1) Remove the 2 retaining screws, and then take off the bracket unit, taking care not to hit against the protrusion.
- (2) Take off E-washer & spring, and remove the REV pinch roller.



When assembling, keep the arm in this position.

Fig. 6

2. MECHANISM DESCRIPTION

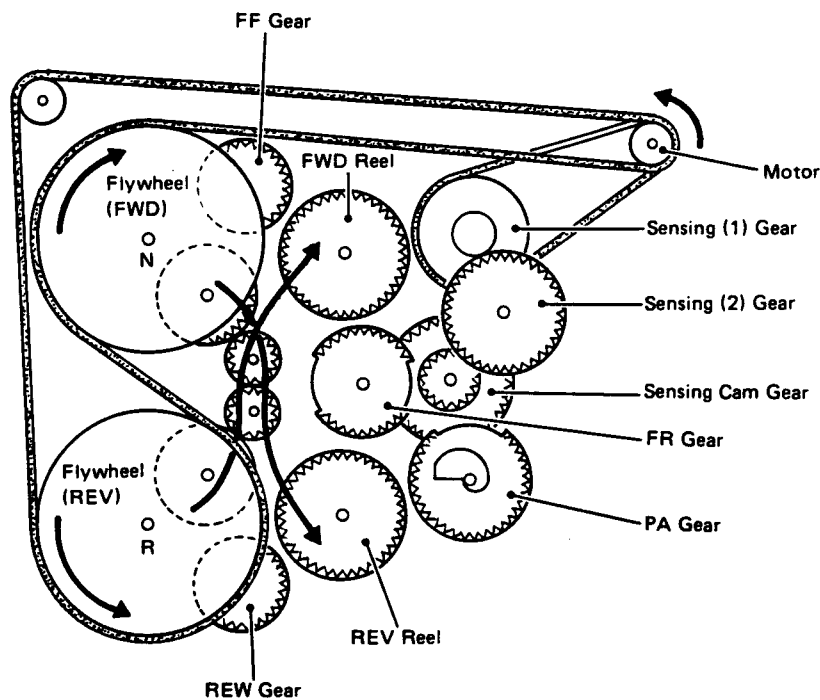


Fig. 7 Transmission of turning force at the time of PLAY (Flywheel → Reel)

• Loading & Playing the Cassette Tape

- (1) When a cassette tape is inserted, a lever pushes against an arm, which then turns ON the motor and tape/tuner (tape side) switches, in this given order.
- (2) When a cassette tape is set, the arm of Fig. 9 (collision preventing) gets depressed, putting the head base in forward movable state.

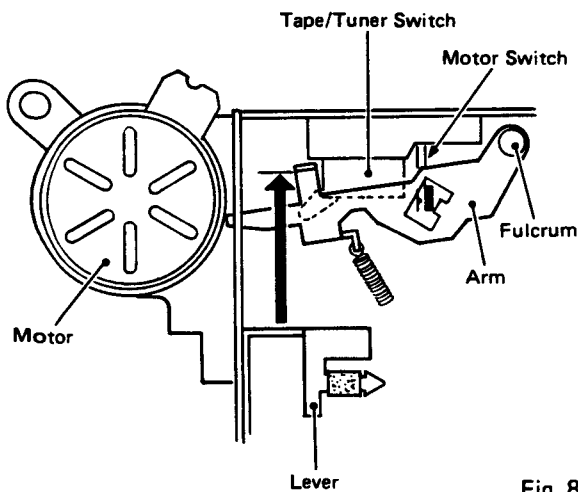


Fig. 8

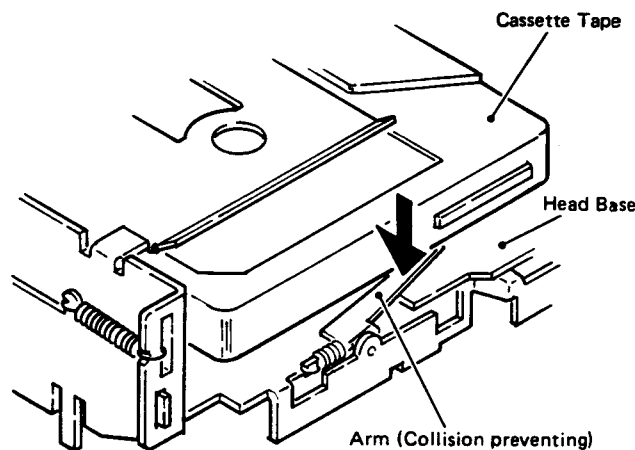


Fig. 9

- (3) As motor switch turns ON, the motor starts running, transmitting its rotations toward the arrow direction shown in the Fig. 10. As a result, flywheel (FWD) runs forward and flywheel (REV) runs backward.
- (4) REW gear then transmits the rotations of flywheel (REV) to REV reel, putting the mechanism in REW state and eliminating tape slackening (ATSC). At this time, the FWD reel is locked by the ratchet mentioned in step (14).

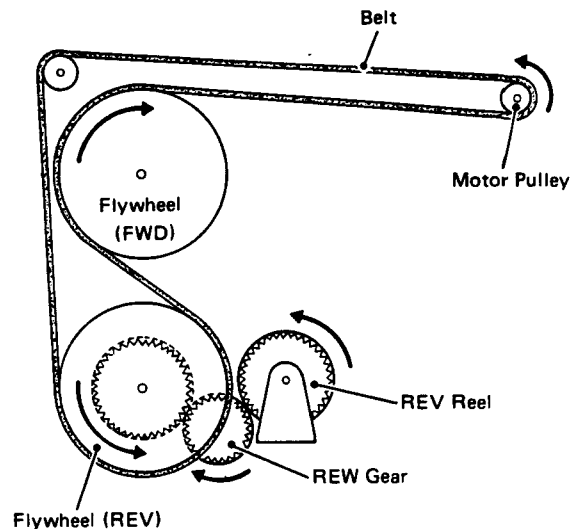


Fig. 10

- (5) In Fig. 11, the reel arms of FWD & REV reels are engaged on the sensing arm. A slight friction causes the reel arms to get locked onto the reels. While REV reel is rotating, the reel arms and sensing lever keep shifting laterally along the arrow direction ① of Fig. 11. Right side movement of the reel arm is caused by the rotation of REV reel; while the left side movement is caused by protrusion of the sensing lever through the inner groove of sensing cam gear.

- (6) REV reel stops as soon as tape slackening is eliminated (the gear of reel is driven by REW gear).
- (7) As soon as the reel stops, the operation of above step (5) sends the reel arm toward the left. Consequently, the protrusion of sensing lever moves along the orbit of dotted line, causing the sensing lever to get pushed by cam and move along arrow ②.
- (8) Sensing lever turns the ATSC lock arm along the direction of arrow ③.

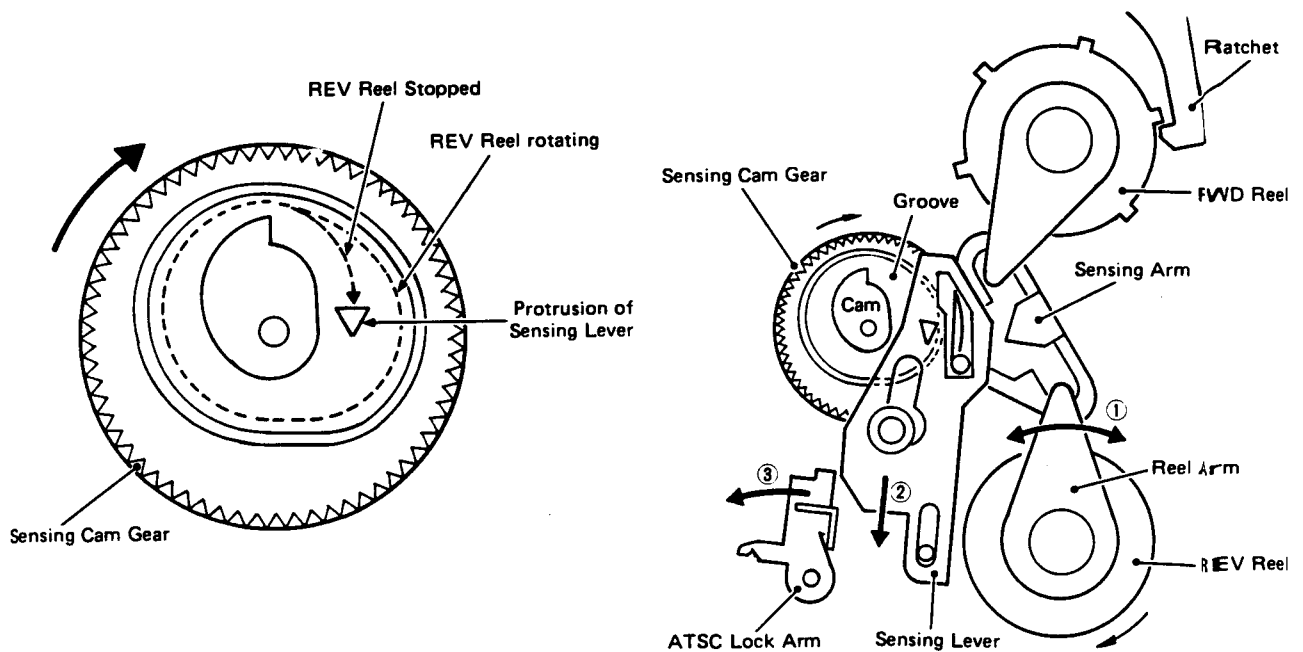


Fig. 11

- (9) In ejected state, PA gear remains locked by ATSC lock arm, as shown in Fig. 13. The force along arrow ③ caused by the operation of above step (8), releases the lock of PA gear, whereupon the PA gear is made to rotate slightly along arrow ④ by the gear driving spring. As a result, the PA gear engages with sensing cam gear, and proceeds to turn through 1 more rotation. The cam of PA gear then causes the HD drawing arm and key-off lock arm to move along arrow ⑤. The HD drawing arm pushes against a lever, and a spring attached to the lever causes the head base to shift along arrow ⑥

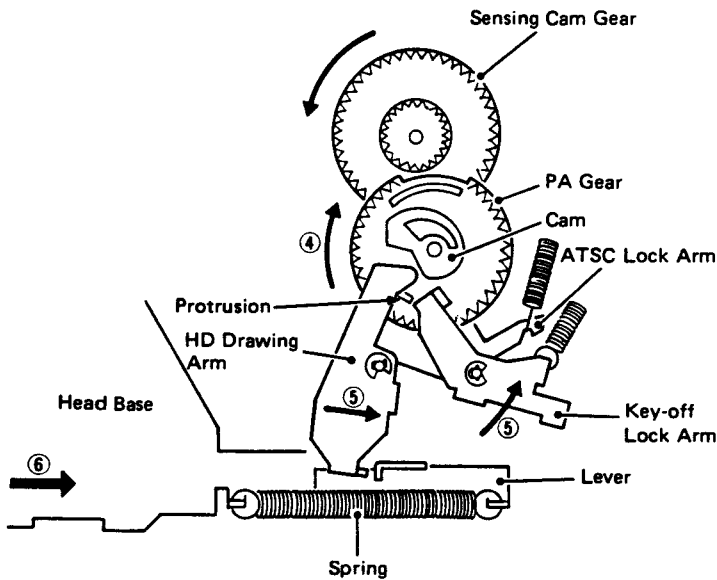


Fig. 12

- (10) With Music Search (MS) (Fig. 14)

The key-off lock arm is pushed toward the outer periphery of PA gear by its cam. As a result, the key-off lock lever shifts along the direction of arrow ⑦, and the tip of solenoid attached at the end of lock lever is pulled in and gets locked into the solenoid (the solenoid is turned by motor switch).

Without MS (Fig. 15)

The key-off lock arm is pushed toward the outer periphery of PA gear.

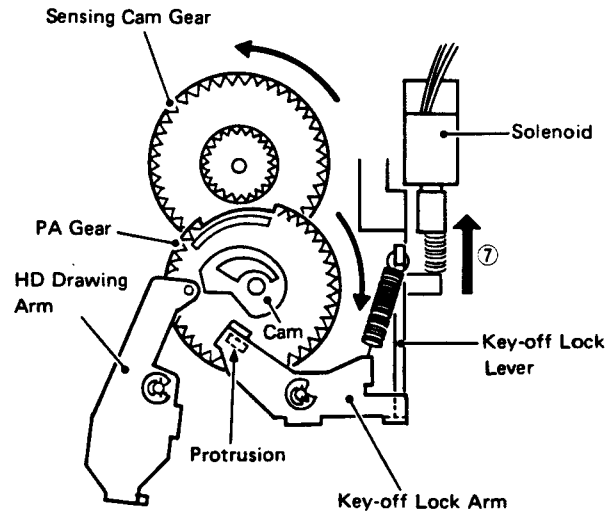


Fig. 14 Stopped state after turning through about 1 rotation (with MS)

- (11) The key-off lock arm engages on the protrusion of PA gear, and concurrently the turning force of sensing cam gear is lost at the no-teeth part PA gear, causing the PA gear to halt.

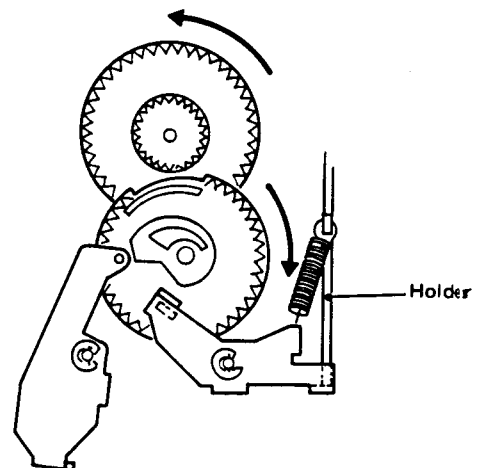


Fig. 15 Stopped state after turning through about 1 rotation (without MS)

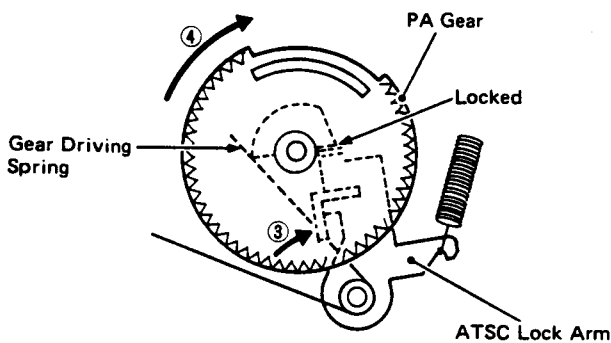


Fig. 13

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- (12) Through a lever & spring, the HD drawing arm causes the head base to shift along the direction of arrow ⑥, in turn drawing out the HD. This movement of head base is accompanied by the following operation.
- (13) The spring A attached to head base causes the pinch roller to begin movement.
- (14) Point A of head base shifts the ratchet along arrow direction ⑧, causing the FWD reel to get detached from it.
- (15) As the FWD pinch roller runs forward, arm A moves along the direction of arrow ⑨, causing arm B to get locked on FWD reel.

- (16) Point C of head base pushes against the pin of REW gear, disengaging the REW gear from REV reel.
- (17) Point B of head base pushes arm B along arrow direction ⑩, making the FWD reel free.
- (18) Spring A causes either the FWD or REV pinch roller to contact the capstan, depending on the existing status (FWD PLAY or REV PLAY) before the mechanism came to halt.
- (19) As point D of head base pushes against arm unit (idler), the play gear engages onto either the FWD or REV reel, depending on the existing status before the mechanism to halt.

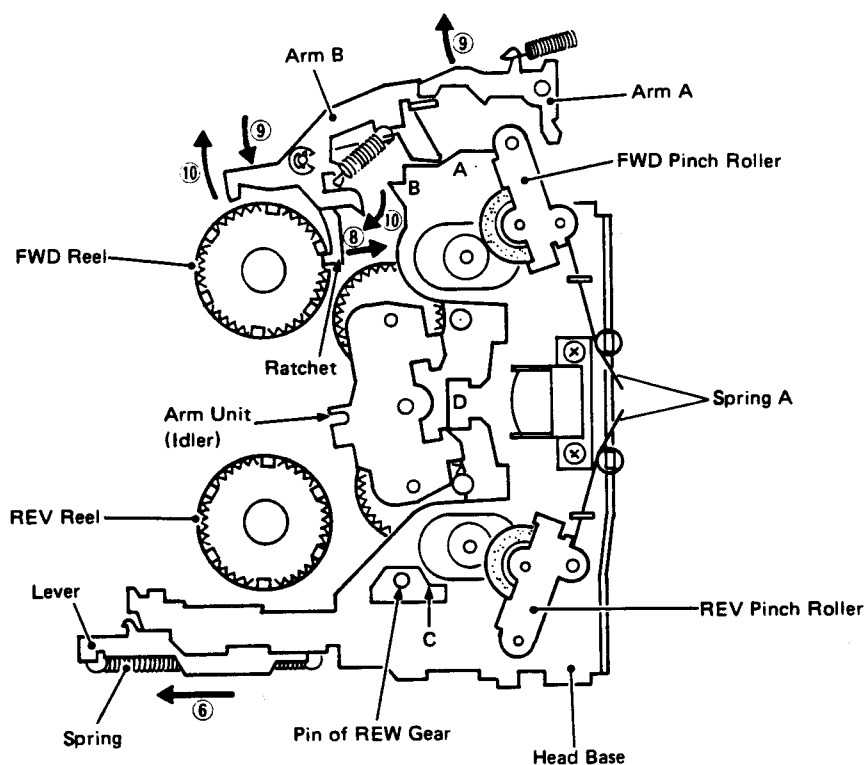


Fig. 16

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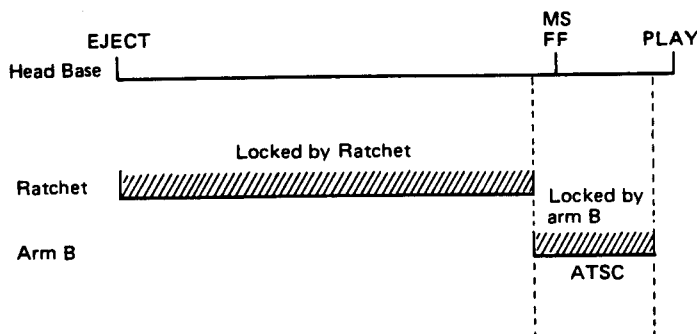


Fig. 17 FWD Reel locking timing

● Sensing Operation (Fig. 18, 19, 20)

○ Auto

1. While playing, since the sensing lever shifts laterally as given in above step (5), the cam of sensing cam gear never pushes against the sensing lever. Upon reaching the end of tape, the cam pushes against sensing lever, and point E goes in to push the arm along arrow direction ⑪.
2. The arm contacts the stopper of FR gear to stop the gear from running. Since the FR gear receives the force along arrow direction ⑫ of spring A, through REV pinch roller & arm (FR), it always tends to rotate along arrow direction ⑬.
3. As soon as the arm disengages from stopper in above step 1, the FR gear engages with sensing cam gear, causing the arm to rotate until contacting the opposite side stopper.

4. The rotation of FR gear sends the arm (FR) toward arrow direction ⑭, in turn switching over the pinch rollers. This switch over is done by the movement of arm (FR), including that of the arm unit (idler) also.

○ Manual

1. When the manual direction switch over lever of Fig. 18 is pushed, the arm moves along arrow direction ⑪. Further operation is identical to that in auto.
2. If the manual direction switch over lever is held pushed, the inner protrusion of FR gear as shown in Fig. 19 contacts spring B of the arm, and stops after turning through half rotation.

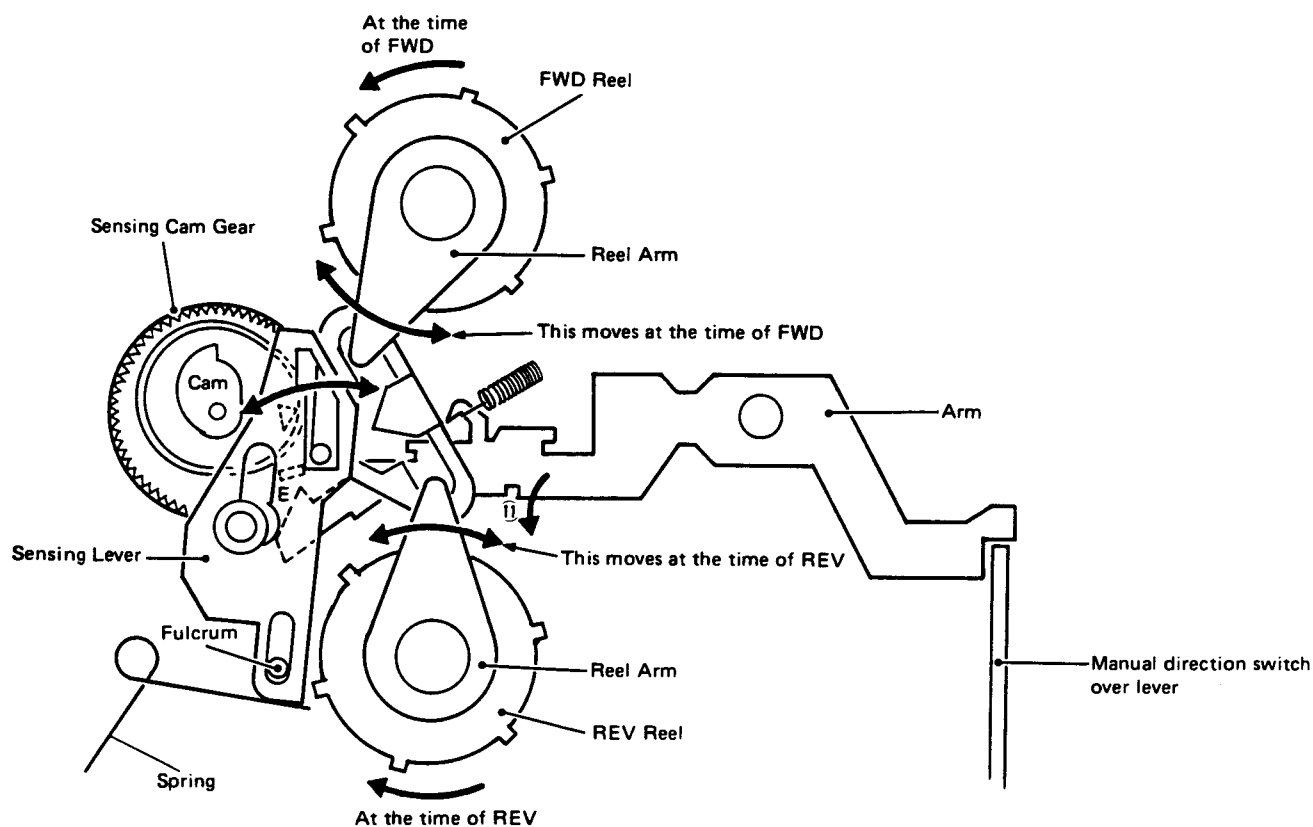


Fig. 18

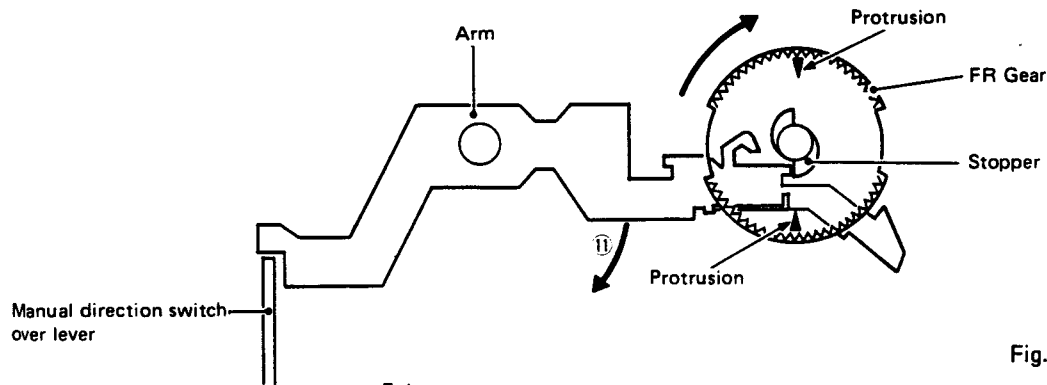


Fig. 19

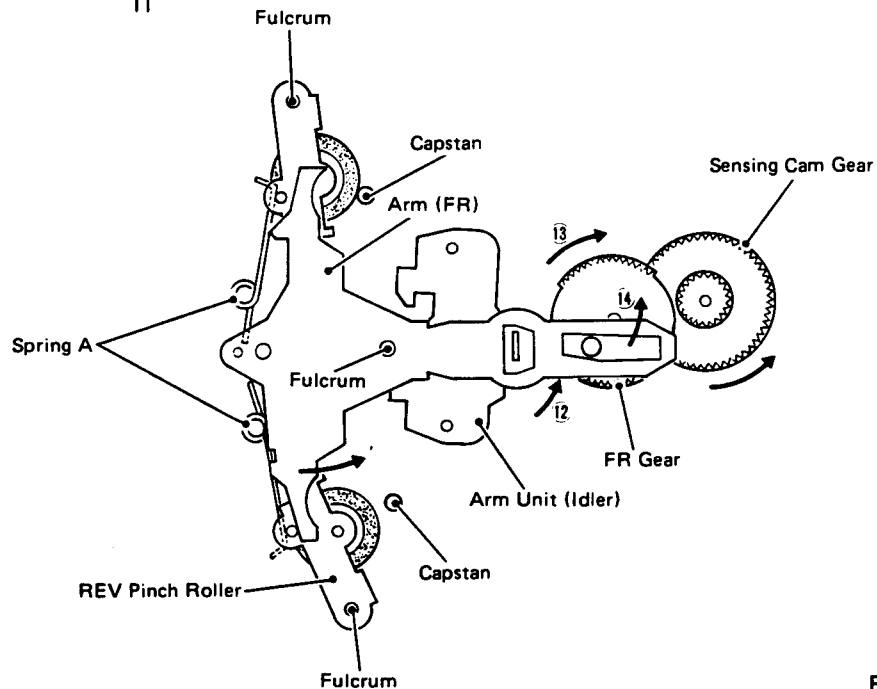


Fig. 20

● Sensing release Mechanism (when drawing out the Head)

1. If the sensing lever is held pushed by sensing cam gear until the head is drawn out, after the lock of PA gear has been released by it, FWD/REV switch over takes place.

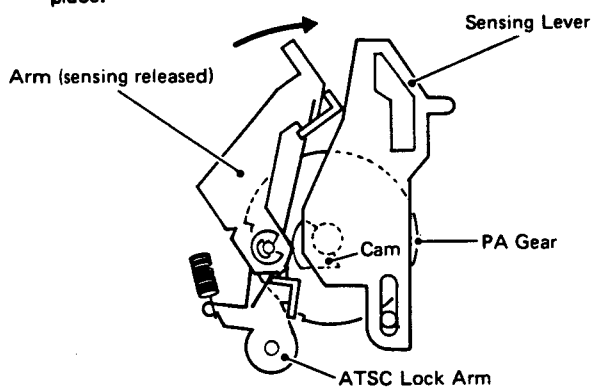


Fig. 21 Drawing out the HD (Sensing released)

2. To prevent this, the arm (sensing released) is held pushed toward arrow direction, by the cam of PA gear, through ATSC lock arm, as shown in Fig. 21. This prevents FWD/REV switch over by keeping the cam of sensing cam gear away from the sensing lever.

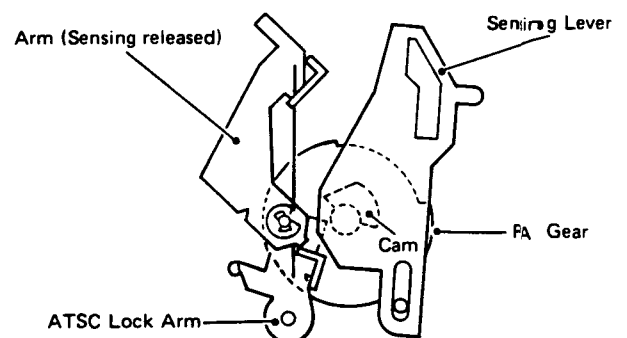


Fig. 22 At the time of PLAY (Sensing operation)

● FF/REW Mechanism (when running FWD)

1. When FF, REW lever is pushed, arm D causes the head base to return upto FF/REW position. The lever makes arm C to rotate along arrow direction ⑫, which then turns ON the mute switch. When pushed further, it gets locked by arm C.
2. The returning of head base also causes the arm unit (idler) to return, and the play gear is detached from the reel.
3. When REW lever is pushed, the head base returns, causing the pin of REW gear also to return to original position, whereby the flywheel (REV), REW gear, and REV reel get engaged together, instating REW mode.
4. When FF lever is pushed, the arm unit (FF) gets pressed, causing the flywheel (FWD), FWD reel, and FF gear to get engaged, again instating FF mode. At this time, REW gear detaches from REV reel and flywheel (REV) due to spring tension.
5. At the time of MS operation, the solenoid turns from OFF to ON while in FF/REW state, and play mode is instated as the head base is returned.

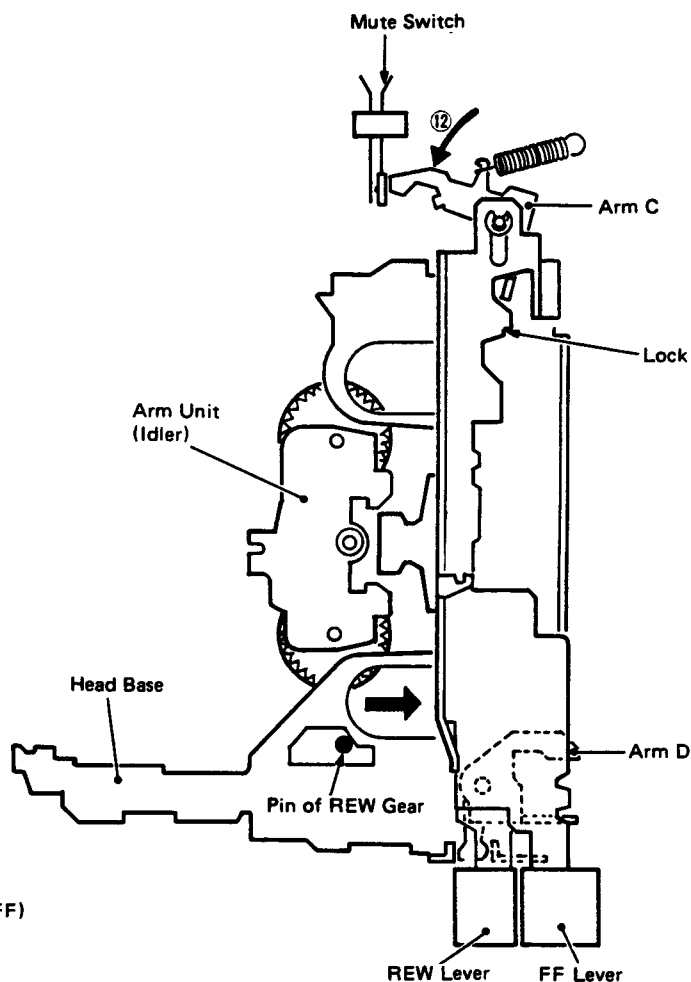


Fig. 23

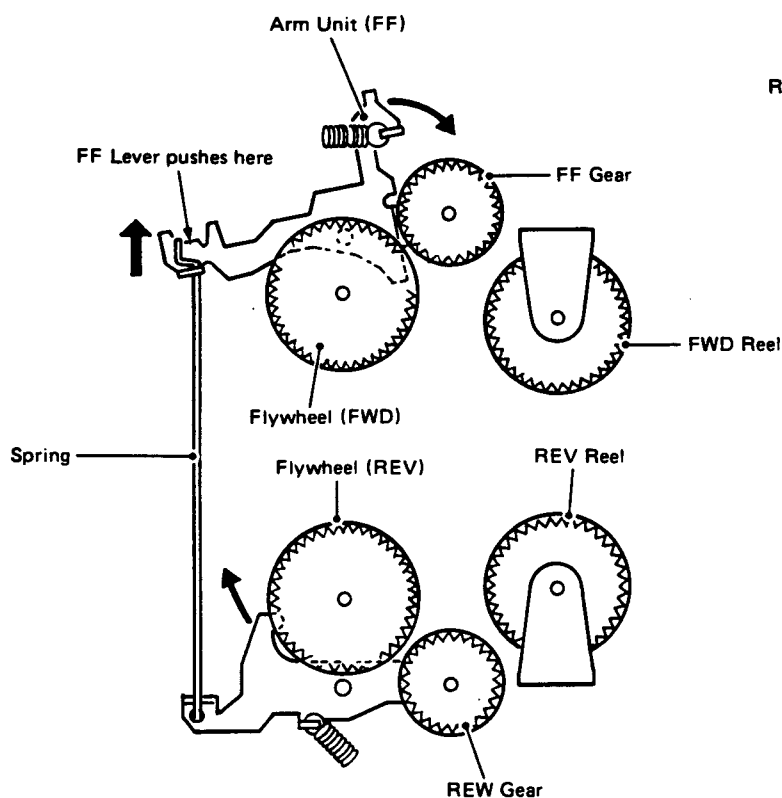


Fig. 24 At the time of FF

● EJECT

1. If FF, REW levers are concurrently pushed, the arm gets caught at point F, sending the lever toward arrow direction.
2. Point G pushes against the arm of Fig. 23, causing the head base to return back.
3. As the head base returns, arm E of Fig. 26 moves along arrow direction ⑬, in turn pushing the key-off lock arm. Thereby, the lock of PA gear gets released, and play state is cancelled.
4. Point H of the lever of Fig. 25 pushes against the cassette holder to eject the cassette tape.

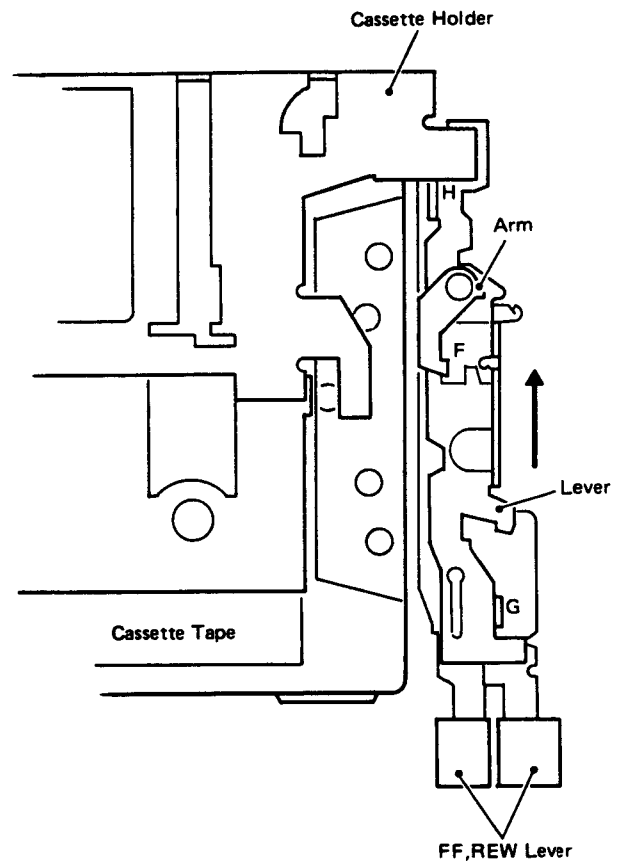


Fig. 25

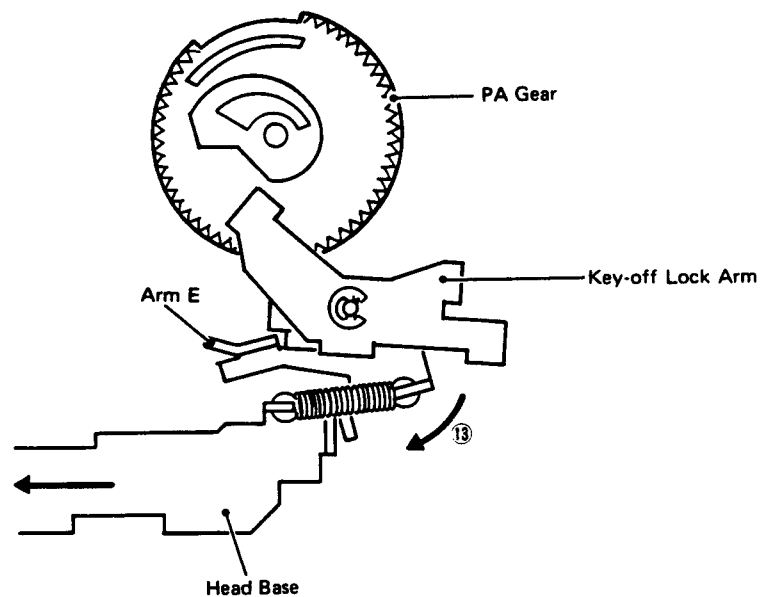


Fig. 26

3. ADJUSTMENT

3.1 AZIMUTH ADJUSTMENT (Fig. 27)

● To Adjust

1. Play "A" side of STD-341A (10kHz, -20dB). Adjust each screw for maximum output in forward and reverse directions.
2. Play "B" side in forward and reverse directions to confirm adjustment.

3.2 TAPE SPEED ADJUSTMENT (Fig. 27)

● To Adjust

1. Reproduce STD-301 (3kHz, -10dB). Adjust the semi-fixed resistor so that the frequency counter shows 3,010Hz (+30Hz, -30Hz).

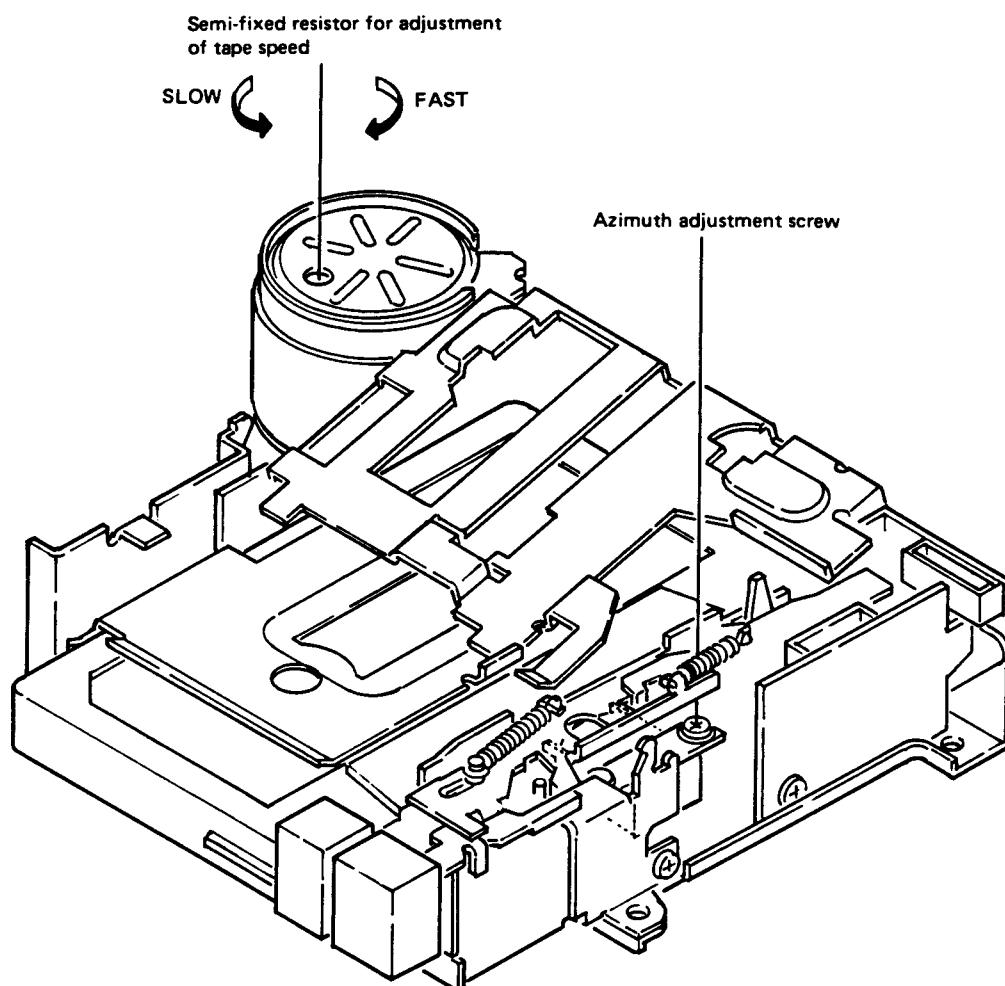
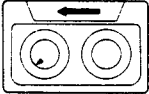


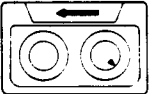


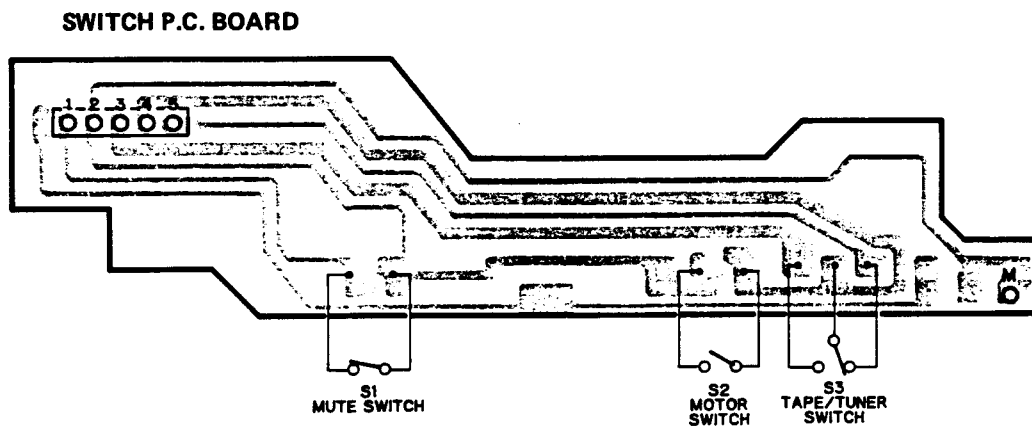
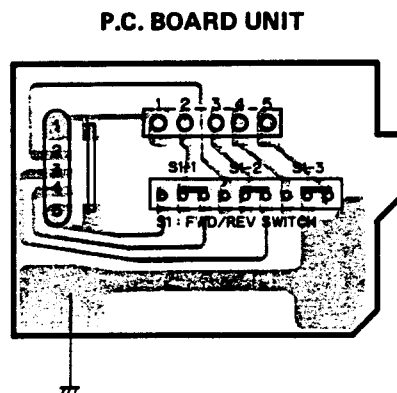
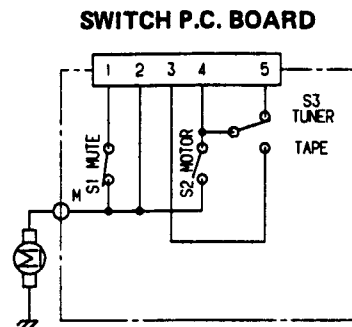
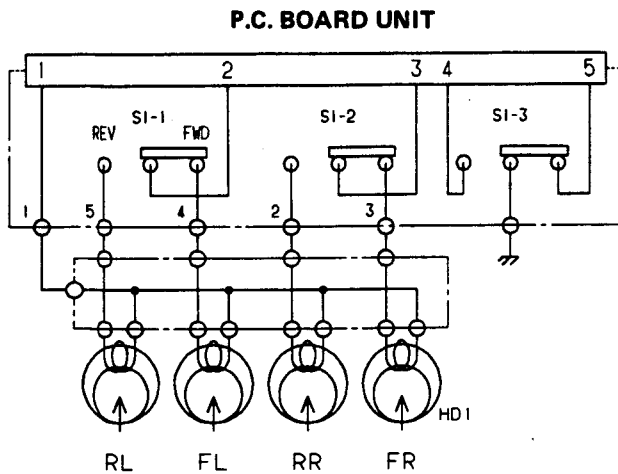
Fig. 27

3.3 CHECK POINTS OF CASSETTE MECHANISM

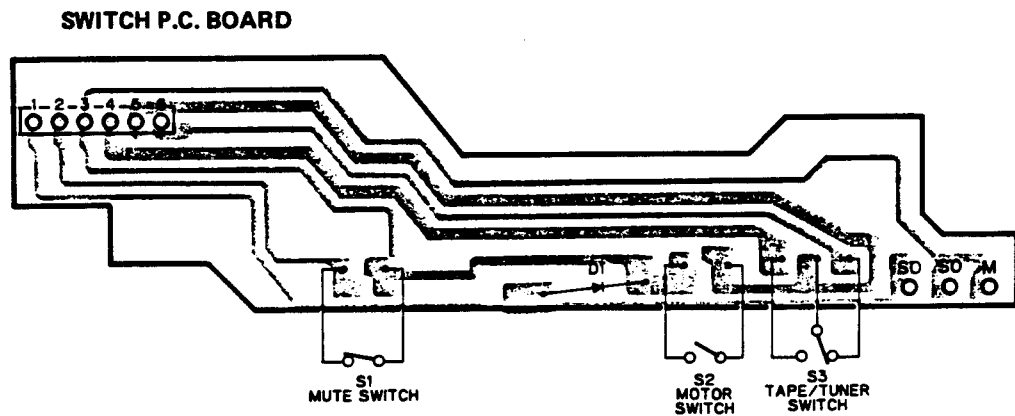
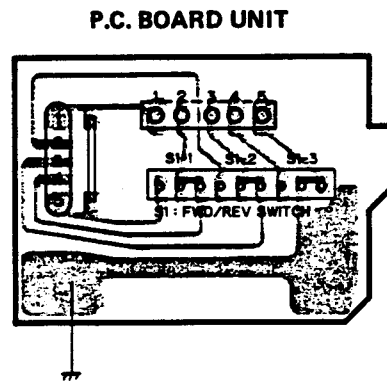
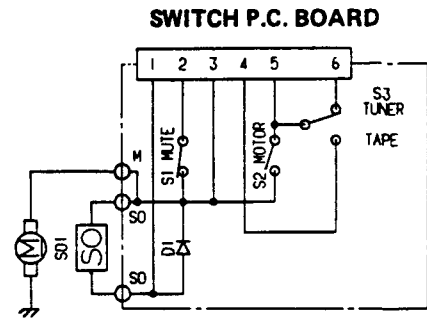
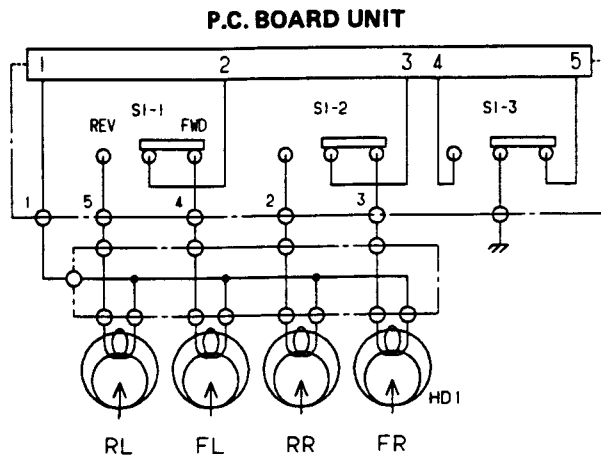
<p>Confirm the following items when replacing parts of the cassette mechanism.</p>	<p>■ Tape speed deviation: $3,000 \begin{smallmatrix} +90 \\ -30 \end{smallmatrix} \text{ Hz}$ $(4.76 \text{ cm/s} \begin{smallmatrix} +3 \\ -1 \end{smallmatrix} \%)$</p> <p>Using an STD-301, measure the speed at the start and end of winding and take the maximum value. Measuring time shall be 5 ~ 6 seconds.</p>	<p>■ Wow and flutter: Less than 0.20% (WRMS)</p> <p>Using an STD-301, measure the wow and flutter at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5 ~ 6 seconds.</p>
<p>■ Fast forward and rewinding time: 95~115 seconds</p> <p>Using a C-60, set to fast forward and rewind, and measure the time with a stop watch.</p>	<p>■ Winding torque: 39~65g·cm</p>  <p>Using a cassette type torque meter (100 g·cm), measure the minimum value while in the play mode. Measuring time shall be 5 ~ 6 seconds.</p>	<p>■ F.F. torque: 110~70g·cm</p>  <p>Using a cassette type torque meter (120 g·cm), measure the value when the tape stops in the F.F. mode.</p>
<p>■ REW torque: 110~70g·cm</p>  <p>Using a cassette type torque meter (120 g·cm), measure the value when the tape stops in the REW mode.</p>	<p>■ Back tension torque: 2~6g·cm</p>  <p>After setting in the REW mode without loading a cassette tape for 5 minutes, measure the back tension torque in the play mode, using a cassette type torque meter.</p>	<p>■ Cassette loading force: Less than 1.5kg</p> <p>Push the center of the cassette and measure the force with a tension meter (3 kg).</p>
<p>■ Eject force: Less than 4kg</p> <p>Using a tension meter (5 kg), measure eject force from play mode to point at which cassette is ejected.</p>		

4. CIRCUIT DIAGRAM & PATTERNS

- Without MS



- With MS



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